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THE MANAGEMENT OF IDIOPATHIC THROMBOCYTOPENIC PURPURA*

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IDIOPATHIC thrombocytopenic purpura is characterized by a hæmorrhagic state associated with a reduction in the number of circulating blood platelets. Despite the low platelet count in the peripheral blood, the number of megakaryocytes in the bone marrow is normal or increased. Since Werlhof's first description of this disease, no effective therapy was available until 1916, when Kaznelson[1] recommended splenectomy and demonstrated the marked increase in platelets after this procedure. There was no rational explanation for the success of splenectomy, and the operation is still performed on an empirical basis because of an approximately 70% cure rate.

Since corticotrophin and corticosteroids were introduced as therapeutic agents, they have been used in the treatment of thrombocytopenic purpura with variable results. In most reports, bleeding promptly ceased and capillary fragility improved, but the platelet response was variable and sustained remission apparently rare.[2-8] Our experience indicates that a considerable number of patients treated with corticosteroids will respond with a complete remission, and that corticosteroids are of inestimable value in the management of cases of thrombocytopenic purpura.

MATERIALS AND METHODS

Twenty-three consecutive patients with idiopathic thrombocytopenic purpura form the basis of this study. Thrombocytopenia due to other causes was excluded. All had typical petechiæ and other hæmorrhagic phenomena, and platelet counts of less than 90,000 per c.mm. There were 20 females and three males. Six were children under six years of age and 17 were adults over 19 years of age.

Platelets were counted by the Rees-Ecker method,[11] normal values being 200,000 to 400,000 per c.mm. The bleeding time was measured by Duke's method,[12] the normal values being one to five minutes. The capillary fragility was determined by applying a pressure of 100 mm. Hg to the upper arm for five minutes.

Cortisone, hydrocortisone and prednisone were the corticosteroids used. The initial dose of cortisone was 200 mg. daily, of hydrocortisone 160 mg. daily and of prednisone 40 mg. daily, in divided doses. The dosage was reduced as the platelet counts improved. Most patients were treated with prednisone.* One patient was treated with dexamethasone, 6 mg. daily.

RESULTS

Results in Patients Treated without Corticosteroids

Nine patients were treated without corticosteroids. They were observed in hospital, receiving supportive therapy such as transfusions when indicated, or being subjected to splenectomy. Four improved spontaneously, in 8 to 14 days, with a complete remission. All were females, two adults and two children, and the onset was acute in each.

Three patients were subjected to splenectomy. In one, splenectomy was performed during the acute phase. There was no improvement in the hæmorrhagic state or in the platelet count and she died nine days later of cerebral hæmorrhage. The other two patients had chronic thrombocytopenic purpura for many years. One, a 46-year-old woman, had a complete remission, whereas a 23-year-old woman had only a temporary remission for three months, after which she relapsed. One 28-year-old woman with acute thrombocytopenic purpura continued with severe bleeding and died of cerebral hæmorrhage three weeks after admission, and a 62-year-old woman died 15 days after onset, also of cerebral hæmorrhage. Thus, there were three deaths due to thrombocytopenic purpura.

CASE REPORTS

CASE 7.—S.S., a 2-year-old girl, was admitted to hospital because of tarry stools for two days and bright red blood in stools just before admission. A day earlier the child fell on her right side, after which a large hæmatoma appeared over the right ilium. Petechiæ were present all over the body. Two weeks before

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*Most of the prednisone used in this study was supplied as Meticorten by the Schering Corporation, Montreal.

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TABLE I.—SUMMARY OF 23 CASES OF IDIOPATHIC THROMBOCYTOPENIC PURPURA

Case	*Age and sex*	*Duration of symptoms*	*Treatment*	*Initial platelet count*	*Platelet increase*	*Time for plat. inc.*	*Progress*
1	5-F	2 weeks	Symptomatic	90,000	160,000	5 days	Remission—12 years.
2	28-F	4 weeks	Symptomatic blood transf.	70,000 30,000	—	—	Died—cerebral hæmorrhage—21 days after admission.
3	63-F	2 days	Symptomatic	50,000	120,000	6 days	Remission—10 years.
4	42-F	9 days	Blood transf., splenectomy	30,000	210,000 20,000	2 weeks	Temporary remission in 2 weeks. Relapsed 3 weeks later—splenectomy. Died—cerebral hæmorrhage—6 weeks after admission and 9 days after splenectomy.
5	62-F	5 days	Symptomatic	30,000	80,000	—	Died—cerebral hæmorrhage—10 days after admission.
6	46-F	6 years	Splenectomy	50,000	1,090,000	4 days	Remission—8 years.
7	2-F	2 days	Symptomatic	12,000	110,000	11 days	Remission—4 years.
8	35-F	5 days	Symptomatic	90,000	188,000	5 days	Spontaneous remission. Corticosteroids withheld because of absence of new bleeding and history of thoracoplasty for tuberculosis.
9	21-F	10 years	Splenectomy	30,000	330,000	4 days	Remission for 3 months, then relapsed with chronic purpura.
			Prednisone, 40 mg.	64,000	84,000		Intra-abdominal bleeding. Purpura increases premenstrually, hence takes prednisone 15 mg. for one week before menstruation.
10	21-M	5 days	Cortisone, 200 mg.	60,000	120,000	9 days	Remission—7 years.
11	33-F	2 days	Cortisone, 200 mg.	18,000	160,000	17 days	Remission—5 years.
12	3-F	2 weeks	Hydrocort., 80 mg.	34,000	186,000	14 days	Remission—4 years.
13	3-M	11 days	Hydrocort., 80 mg.	36,000	180,000	5 days	Remission—4 years.
14	62-F	4 days	Hydrocort., 80 mg.	26,000	160,000	6 days	Remission—4 years.
15	31-F	4 years	Hydrocort., 160 mg.	60,000	200,000	8 days	Temporary remission.
			Prednisone, 40 mg.	40,000	280,000	10 days	Temporary remission.
16	20-F	2 days	Prednisone, 40 mg.	26,000	190,000	10 days	Remission—3 years.
17	53-F	8 days	Hydrocort., 160 mg.	58,000	200,000	30 days	
			Prednisone, 40 mg.	54,000	220,000	12 days	
			Splenectomy		950,000	7 days	Remission—3 years.
18	6-M	1 day	Prednisone, 40 mg.	22,000	230,000	11 days	Remission—3 years.
19	19-F	1 day	Prednisone, 40 mg.	42,000	200,000	12 days	Remission—2 years.
20	19-F	8 weeks	Prednisone, 40 mg.	44,000	200,000	10 days	Temporary remission; required 25 mg. prednisone daily to maintain remission.
			Splenectomy	200,000	750,000	5 days	Remission—1½ years.
21	3-F	4 days	Prednisone, 40 mg.	60,000	206,000	6 days	Remission—1½ years.
22	39-F	3 years	Prednisone, 40 mg.	70,000			
			Splenectomy		706,000	7 days	Remission—1 year.
23	52-F	5 days	Dexamethasone, 6 mg.	46,000	222,000	5 days	Remission—3 months.

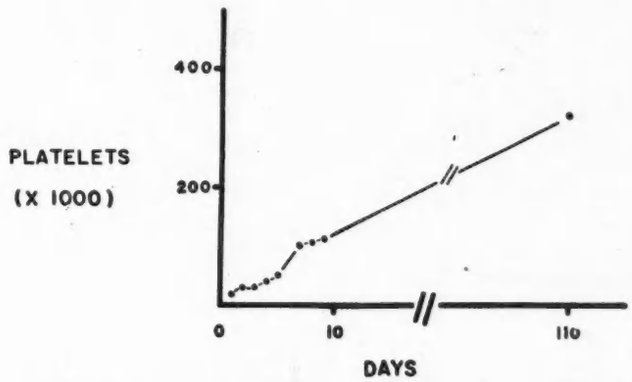


Fig. 1.—Case 7. Variation in platelet count in a 2-year-old girl with spontaneous remission.

admission the patient had an upper respiratory infection. The platelet count was 12,000 per c.mm. and only a rare platelet was seen on the smear. Although cortisone was recommended, the patient was treated with terramycin only. The bleeding subsided and the old lesions cleared. The platelet count rose to 110,000 per c.mm. by the time of discharge 10 days later, and four months later the patient was well, with a platelet count of 360,000 per c.mm. (Fig. 1).

Comment.—This case is typical of the acute thrombocytopenic purpura frequently seen in children, especially after an upper respiratory infection. Although spontaneous recovery is the rule, the results are unpredictable both as to length of illness and final outcome.

CASE 2.—E.A., a 28-year-old woman, was admitted to hospital because of purpura of four weeks' duration. Before admission, the purpura increased in severity with bleeding gums and profuse menstruation. There was no history of previous medication except for occasional aspirin. The platelet count ranged between 30,000 and 90,000 per c.mm. and the capillary fragility was increased. Bleeding from the gums, vagina, gastrointestinal tract and urinary tract continued, at times sufficient to result in peripheral vascular collapse. The patient received many transfusions and, although splenectomy was being considered, she suddenly developed a cerebral hæmorrhage, became comatose and died (Fig. 2.)

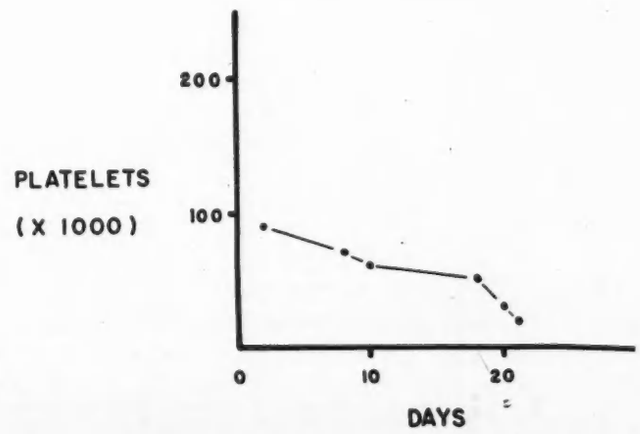


Fig. 2.—Case 2. Variation in platelet count in a 28-year-old woman with acute thrombocytopenic purpura who died of cerebral hæmorrhage.

CASE 4.—P.F., a 42-year-old woman, was admitted to hospital because of purpura of nine days' duration which included bleeding from the gums and vagina. A year earlier, she noted bruises on her skin lasting about two weeks. The platelet count on admission was 70,000 per c.mm., bleeding time nine minutes, and the capillary fragility was increased. There appeared to be a spontaneous remission about 10 days after admission in that the bleeding ceased and the platelet count returned to 210,000 per c.mm. This was short-lived, however, as bleeding recurred five days later and became very profuse. Bleeding from gums and vagina was continuous and uncontrollable and the platelet count fell to 30,000 per c.mm. Protamine was ineffective in controlling the hæmorrhage. A splenectomy was performed one month after admission without any influence on the bleeding or platelet count, and the patient died of a cerebral hæmorrhage nine days later (Fig. 3).

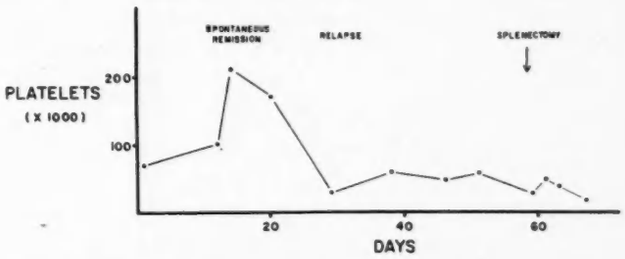


Fig. 3.—Case 4. Variation in platelet count in a 42-year-old woman with chronic thrombocytopenic purpura in relapse. There was no response to splenectomy and she died of cerebral hæmorrhage.

Comment.—These cases illustrate the problem of conservative management in the absence of therapeutic measures to control active bleeding. The hazard of splenectomy during the acute hæmorrhagic phase as a desperate measure is typical of the experience of others.[11, 17]

Results in Patients Treated with Corticosteroids

Fourteen patients were treated with corticosteroids. Two were treated with cortisone, five with hydrocortisone, eight with prednisone (including two previously treated with hydrocortisone) and one with dexamethasone. Ten cases were acute and four were chronic. All patients with acute thrombocytopenic purpura had a complete remission in four to 17 days. Of the acute cases, four

TABLE II.—SUMMARY OF RESULTS IN 23 CASES OF IDIOPATHIC THROMBOCYTOPENIC PURPURA

Patients treated without corticosteroids 9	Acute 7	Remissions—4 Died of cerebral hæmorrhage—3 including 1 after splenectomy.
	Chronic 2	Splenectomy—2 { 1 remission; 1 relapse
Patients treated with corticosteroids 14	Acute 10	Remissions—10
	Chronic 4	Temporary remission—1 Splenectomy with remission—3

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were in children and six were in adults. Four patients (all adults) had a chronic type, and although the platelet count reached normal levels with high doses of steroids, they fell as the dosage was reduced. Three patients accepted splenectomy with a good remission in each, whereas one refused splenectomy. An additional patient with chronic thrombocytopenic purpura who did not respond to splenectomy received prednisone during relapse with temporary remission. As purpura appeared to increase a few days before menstruation, she received intermittent prednisone therapy with satisfactory clinical response.

CASE 17.—C.E., a 53-year-old woman, was admitted to hospital because of purpura and epistaxis of eight days' duration. For the past three years the patient had been receiving 5 to 20 mg. of cortisone daily for asthma. She was receiving this dose of cortisone at the time the thrombocytopenia appeared. Her spleen had been palpable to about 2 cm. below the left costal

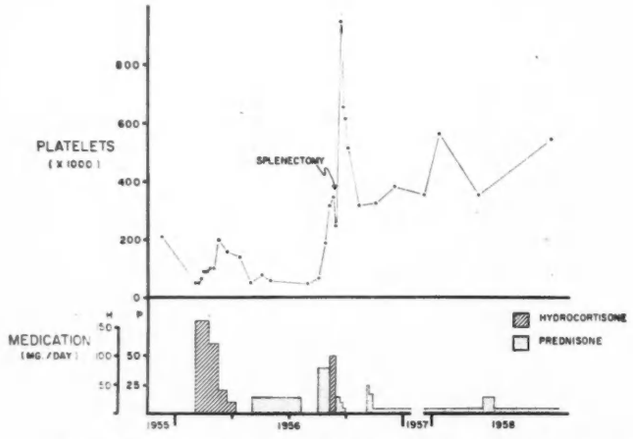


Fig. 4.—Case 17. Good remission with hydrocortisone but relapse as dose was reduced. Complete remission after splenectomy. Small doses of prednisone given during past few years were for chronic asthma.

border for four years. At the time of admission the only significant findings were purpura and slight splenomegaly. The platelet count was 50,000 per c.mm., the bleeding time longer than 20 minutes and the capillary fragility was increased. In February 1954, a year before the onset of purpura, the platelet count had been 210,000 per c.mm. The megakaryocytes were increased, with many immature forms; otherwise the bone marrow was normal. Hydrocortisone was given in a dose of 160 mg. daily with rapid clinical improvement and gradual increase of platelet count to 200,000. The hydrocortisone dose was gradually reduced and discontinued because of the appearance of epigastric burning. Within a few weeks the thrombocytopenia recurred but there was no purpura. Prednisone 15 mg. daily was started but the platelet count did not improve although she remained free of purpura. The patient was readmitted seven months after the onset for a splenectomy. Pre-treatment with 40 mg. of prednisone daily again resulted in a return of the platelet count to normal. The operation was uneventful and the normal platelet count has persisted (Fig. 4). She still receives periodic treatment with prednisone in doses of 10 to 20 mg. daily for her asthma. Although the spleen was palpable it weighed

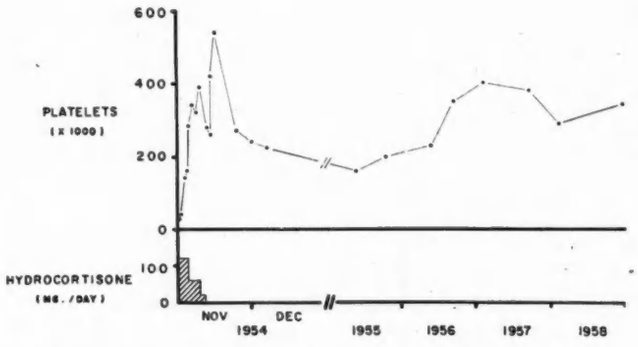


Fig. 5.—Case 14. Acute thrombocytopenic purpura in a 62-year-old woman with remission after hydrocortisone.

only 215 g.; pathological examination revealed dilatation of the sinusoids.

Comment.—This case is of interest in that the thrombocytopenic purpura appeared while the patient was receiving small doses of cortisone. It also illustrates the importance of large doses of steroids, as 15 mg. of prednisone did not influence the platelet level, whereas larger doses induced a remission. Despite the acute onset, the course was that of a chronic thrombocytopenic purpura and hence splenectomy was advised. The remission has persisted and was probably not significantly influenced by the periodic treatment of her asthma with prednisone.

CASE 14.—M.M., a 62-year-old woman, developed purpura, bleeding gums, epistaxis and hæmaturia four days before admission. There was no past history of purpura although she has always bruised easily. A week before admission she developed polyuria and polydipsia. Glycosuria was 4+, fasting blood sugar 257 and sugar level after a meal 330 mg. %. The platelet count was 26,000 per c.mm., the bleeding time was over 24 minutes and the capillary fragility was greatly increased. The only abnormality in the bone marrow was a hyperplasia of megakaryocytes with many immature forms. Treatment was started with 120 mg. hydrocortisone daily and insulin for the diabetes. Purpura cleared rapidly except at the sites of insulin injections. The patient has remained well for the past four years (Fig. 5).

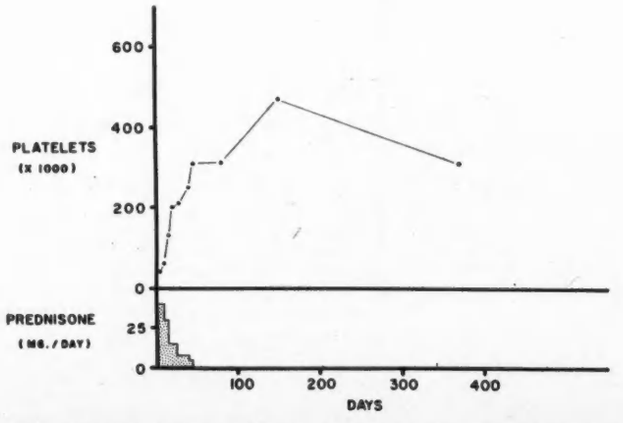


Fig. 6.—Case 19. Acute thrombocytopenic purpura with remission after prednisone.

CASE 19.—E.T., a 19-year-old girl, suddenly developed numerous petechiæ over the body and mucous membranes as well as a large ecchymosis over her back on the day before admission to hospital. She had had an upper respiratory infection two weeks earlier. The platelet count was 42,000 per c.mm., the bleeding time was 15 minutes and the capillary fragility was increased. Prednisone 40 mg. daily was administered. The purpura cleared rapidly and the platelet count rose to 200,000 per c.mm. in 20 days. She has remained well (Fig. 6).

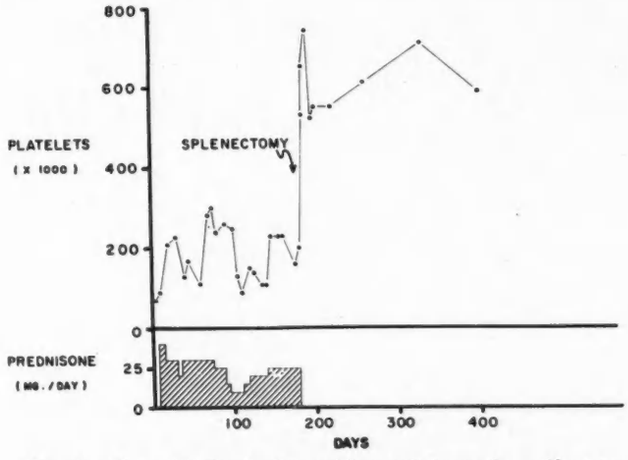


Fig. 7.—Case 20. Remission with prednisone in a 19-year-old girl. Required maintenance therapy to prevent relapse and developed marked hypercortisonism. Continued remission after splenectomy.

CASE 20.—R.S., a 19-year-old girl, developed generalized purpura, epistaxis, bleeding gums and menorrhagia two months before admission. She sprained her left ankle and developed a large ecchymosis extending up the leg and down to the toes. The platelet count was 64,000 per c.mm., the bleeding time was longer than 20 minutes and there was an increased capillary fragility. The bone marrow revealed increased megakaryocytes. With 40 mg. of prednisone daily there was a rapid improvement, the platelet count rising to normal in nine days. The prednisone dose was gradually reduced to 20 mg. daily but the platelet count fell and occasional purpuric spots recurred. She required a minimum of 25 mg. of prednisone daily to maintain her platelet count at normal levels. She developed marked hypercortisonism, hirsutism and obesity. A splenectomy was therefore performed five months later, with a complete remission to date (Fig. 7). The splenectomy was performed at a time when the platelet count was normal. Treatment with intravenous cortisone on the day before, during and after the operation assured adequate support for the operative procedure. The side effects due to the corticosteroids have cleared.

Comment.—Whereas moderate doses of corticosteroids could maintain a normal platelet count, the side effects in a young woman were too great to permit this form of therapy to be maintained. Splenectomy, made safe and elective with pretreatment with corticosteroids, was uneventful and resulted in a complete remission. This is in sharp contrast to Case 4, where splenectomy was performed during the acute hæmorrhagic phase with no influence on the course of the disease.

CASE 15.—S.G., a 31-year-old woman, developed purpura two months before admission to hospital. She had a similar episode of purpura two years earlier which lasted only a few days. The purpura was not severe, and the only bleeding, other than into the skin, was from the gums. The spleen was palpable 2 cm. below the left costal border. The platelet count was 60,000 per c.mm. and the bone marrow examination revealed an increased number of megakaryocytes with many immature forms. Improvement in platelet counts followed the administration of 160 mg. of hydrocortisone daily. The platelet count remained normal for almost two years, when purpura recurred once more and the count dropped to 32,000. The patient was readmitted and treated with 40 mg. of prednisone daily; a good remission again resulted (Fig. 8). The platelet count fell to lower levels two months after prednisone was discontinued. She has remained well except for an occasional purpuric lesion. Splenectomy was recommended many times but was refused by the patient.

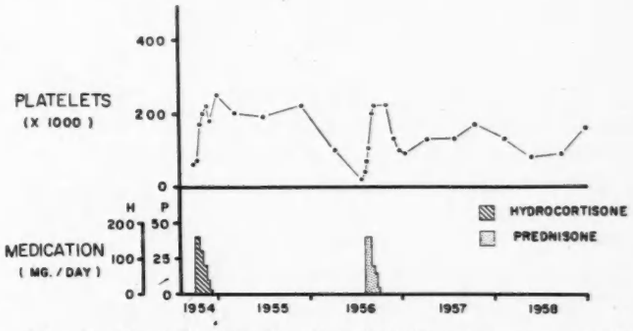


Fig. 8.—Case 15. Chronic thrombocytopenic purpura with remission after hydrocortisone and prednisone.

Comment.—This patient has chronic thrombocytopenic purpura. She had a spontaneous remission for two years, an induced remission with hydrocortisone for two years, and another induced remission with prednisone but with persistent mild thrombocytopenia.

DISCUSSION

The course of idiopathic thrombocytopenic purpura is extremely variable and the outcome unpredictable. Despite various attempts at prognostication, based on such findings as the presence of marrow eosinophilia, which indicates a good prognosis,[15] and the greater likelihood of spontaneous remissions in children than adults,[16] accurate prediction in an individual case is impossible. Spontaneous remissions may appear within a few days or take many months. As a result, until recently, treatment consisted of watchful waiting for periods up to three or four months. Decision for splenectomy depended on the relative risk of cerebral or exsanguinating hæmorrhage as opposed to the operative risk. The period of conservative therapy and the incidence of splenectomy naturally varied from clinic to clinic, depending on individual experience.[13, 17]

ACTH and the corticosteroids have become very important adjuncts in the management of throm-

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bocytopenic purpura. The effects of ACTH were first studied by Robson and Duthie[2] during an investigation on capillary resistance. As ACTH appeared to increase capillary resistance, it was administered to two patients with thrombocytopenic purpura, resulting in a temporary clinical remission and an increase in platelet count. Many reports followed on additional series of patients treated with either ACTH or one of the corticosteroids.[3-10] All reported success in the rapid cessation of bleeding and some increase in platelets, but the success was not always lasting.

Because it was believed that the corticosteroids have little direct effect in increasing circulating blood platelets, splenectomy was ultimately performed in more than half of the cases treated with corticosteroids.[3-9] In most cases this was due to the fact that the dose had been too small and frequently the period of treatment was too short. With larger doses of these hormones, a clinical and platelet remission may be induced in the majority of patients. Case 17 illustrates the importance of adequate dosage. This patient was receiving 5 to 20 mg. of cortisone daily for asthma when the thrombocytopenia appeared. With 160 mg. of hydrocortisone daily a good remission was induced. When she later relapsed, 15 mg. of prednisone had no influence on the platelet count but when this was increased to 40 mg. daily, the platelet count rose to 320,000 per c.mm.

The reports appearing during the past few years from one group of investigators illustrate the evolution of interpretations of the influence of the corticosteroids in thrombocytopenic purpura. In their first report in 1952, they found that ACTH and cortisone were chiefly of value in controlling severe bleeding and in preparation for splenectomy, but that permanent remission of the disease was not obtainable.[7] In 1955, they reported that permanent remission was common in acute cases but not in the chronic forms of thrombocytopenic purpura.[18] In a recent study it is concluded that prednisone, in sufficient dosage, can restore the platelet count to normal in both acute and chronic cases, and that prednisone is superior to ACTH or cortisone in this ability to induce a remission.[10]

The classification of idiopathic thrombocytopenic purpura into acute and chronic types was based chiefly on the duration of the thrombocytopenic state. Thus Hirsch and Dameshek[13] considered 120 days, and Watson-Williams, Macpherson and Davidson[9] 100 days, as the division between the "short history" and "long history" cases. The inference was that the cases with a short history had a good prognosis with a tendency towards spontaneous remissions, whereas those with a long history tended to relapse, should a remission occur at all. The general experience has been that chronic cases may improve with corticosteroids but that remissions are temporary and are usually best treated by splenectomy. Because of the frequency of relapses following splenectomy in his experience, Dameshek[10] has recently advocated maintenance prednisone therapy for patients with chronic thrombocytopenic purpura. The chief objection to this form of therapy is the side reactions which frequently develop, such as hypercortisonism, osteoporosis and peptic ulceration. As splenectomy usually results in permanent remission in about 75% of cases,[9, 19] prolonged or intermittent steroid therapy is best reserved for cases of relapse after splenectomy.

The mechanism of action of the corticosteroids is not established. The dramatic effect on cessation of bleeding appears to be mediated through the small blood vessels in increasing capillary resistance.[2, 4] The demonstration that idiopathic thrombocytopenic purpura is associated with auto-immunity[20] would suggest that the corticosteroids act by reducing either the antibody or the antigen-antibody reaction, thus prolonging survival of the circulating blood platelets. This is similar to the explanation offered for the effect of steroids in auto-immune hæmolytic anæmia.[21]

In our experience, all patients with thrombocytopenic purpura treated with corticosteroids responded in four to 17 days with a platelet remission which persisted in the acute cases but was only temporary in the chronic. Admittedly, many acute cases may have had a spontaneous remission, but in many others thrombocytopenia would certainly have persisted for longer than 17 days, and might have led to severe or even fatal hæmorrhage as well, as was the case with some of our untreated patients. Two patients, with an eight-week and one-week history of purpura respectively, responded to corticosteroids with temporary remissions only, and were later treated by splenectomy. These were included with the chronic cases because of this behaviour with corticosteroids. Although the history of purpura before therapy was short, had they not been treated early they might have fallen into the "long history" cases of Watson-Williams, Macpherson and Davidson.[9] The response to steroid therapy would appear to be a better criterion for classification into acute or chronic types of purpura than the history.

It is generally agreed that a patient with thrombocytopenic purpura should be treated with a minimum of 40 mg. of prednisone daily. Our experience indicates that the other steroids, in proportionate dosage, are equally effective. The most desirable corticosteroid is the one with minimal side effects. Within 24 hours there is usually a dramatic cessation of bleeding and the period of observation is made safe. As the platelet count returns towards normal, the steroid dosage may be gradually reduced. If a normal platelet count persists, the drug is discontinued. By this means, splenectomy may be avoided in the majority of acute cases. Should the platelet count fall as the corticosteroid dose is reduced, the dose should be

increased to maintain the count at a safe level (over 120,000 per c.mm.). Such patients may be considered as having chronic purpura and should be prepared for splenectomy. Splenectomy, with the aid of steroids, becomes an elective, bloodless procedure rather than a dangerous, last-resort measure as in the past. In relapses after splenectomy, prednisone may be given during episodes of acute bleeding, usually with a good clinical remission and improvement in platelet count.

Similar treatment with corticosteroids applies to patients with thrombocytopenia due to drugs and infections, where spontaneous remission is the rule. Death during the acute hæmorrhagic phase may occur in these cases as well as in idiopathic thrombocytopenia and can be prevented with corticosteroids while awaiting remission. Similarly, with thrombocytopenia secondary to lymphomas, or in lupus erythematosus, where megakaryocytes may be plentiful in the marrow, remissions may be induced and maintained with corticosteroids.

SUMMARY AND CONCLUSIONS

Twenty-three consecutive cases of idiopathic thrombocytopenic purpura are reviewed, 14 of which were treated with corticosteroids.

Three patients died of cerebral hæmorrhage before corticosteroids were available. There were no deaths in those treated with corticosteroids.

Of the 14 cases treated with steroids, 10 were acute and had a complete remission, whereas four were chronic with a temporary remission. Three of the patients with chronic purpura had a splenectomy which was followed by a complete remission.

It is concluded that all patients with thrombocytopenic purpura should be treated with large doses of corticosteroids as soon as the diagnosis is made. This applies to patients with thrombocytopenic purpura due to drug sensitivity and to symptomatic thrombocytopenic purpura as well. Hæmorrhage is thus rapidly controlled and the platelet count is returned to normal. In most cases, splenectomy may be avoided as a complete remission is induced. Where thrombocytopenia recurs as the corticosteroid dosage is reduced, splenectomy will ultimately be required.

Preparation of a patient for splenectomy with corticosteroids has made this a safe and elective procedure, rather than the hazardous emergency operation of former years.

Where relapse occurs after splenectomy, the corticosteroids may be used either continuously or intermittently, as indicated, to reduce the risk of serious hæmorrhage. To minimize side reactions, small doses of steroids may be sufficient to attain the desired effect without attempting to reach normal platelet levels.

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RÉSUMÉ

L'auteur présente une série de 23 cas de thrombocytopénie idiopathique dont 14 reçurent des stéroïdes. Avant l'avènement de cette thérapie trois de ces malades moururent d'hémorragie cérébrale; il n'y eut aucune mortalité depuis que l'usage de ces hormones est accepté. Des 14 cas traités aux stéroïdes 10 étaient des cas aigus et obtinrent une rémission complète; les quatre cas chroniques n'eurent qu'une rémission temporaire. Trois malades chroniques obtinrent une rémission complète après splénectomie. L'analyse de ces résultats semble indiquer que tous les cas de thrombocytopénie doivent être traités d'emblée par de fortes doses de stéroïdes quelle qu'en soit l'étiologie. L'hémorragie s'arrête alors rapidement et les plaquettes reviennent au taux normal. Dans la majorité des cas il n'est pas nécessaire d'avoir recours à la splénectomie puisqu'il y a rémission complète. Si cependant la thrombocytopénie réapparaît lorsque les stéroïdes sont diminués, la splénectomie finit par s'imposer.

La préparation par les stéroïdes d'un thrombocytopénique à la splénectomie a beaucoup réduit les risques que présentait jadis cette opération. L'intervention est maintenant élective et sûre. Si des rechutes se produisent après la splénectomie on peut administrer des stéroïdes à dose continue ou intermittente selon l'indication afin de diminuer les risques d'hémorragie grave. Afin d'éviter leurs effets secondaires, les stéroïdes peuvent être donnés à petite dose sans chercher à rehausser le niveau des plaquettes à la normale.

RELATIONSHIPS BETWEEN PHYSICIANS

"I have been concerned for some time with the question of whether or not the American Medical Association truly serves the interests of all physicians or whether it places undue emphasis on the interest of physicians in private practice. It was with these thoughts in mind that I suggested to the Board of Trustees of the American Medical Association that the Association study the current relationship of doctors of medicine who are not in private practice to those who are in private practice. It was my thought that the scope and extent of the problems involved in working and organizational relationships be determined. I further suggested that such action as may be needed and desired be taken to strengthen the American Medical Association as an organization for all doctors of medicine. Such a study is currently being made."—Bruce Underwood: *J. A. M. A.*, 168: 1000, 1958.

STUDIES OF ERYTHROCYTE SURVIVAL IN ACUTE LEUKÆMIA*

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THE INTRODUCTION of radioactive chromium for tagging red blood cells and estimating blood volume[1] and erythrocyte survival time[2] has provided a relatively simple technique for evaluation of the presence and degree of hæmolysis without significant risk to patients. It has the advantage over the more accurate Ashby technique that it can be used to estimate survival of an individual's red cells in his own blood stream. While the results obtained are not a true measure of survival, a curve can be derived for comparison with similar curves from normal subjects.

Studies of red cell survival in chronic leukæmia have been made by this method[3, 4] and a few observations are recorded of survival in acute leukæmia.[4] The present study is concerned with red cell survival in acute leukæmia; results obtained are correlated with other laboratory and clinical evidence of hæmolysis.

CLINICAL MATERIAL

The subjects were 12 patients with blast cell leukæmias. Ten of the cases first manifested themselves as acute leukæmia. Case 7 was one of polycythæmia vera culminating in acute leukæmia and Case 8 was one of chronic granulocytic leukæmia with an acute terminal phase. Most of the subjects were tested shortly after the diagnosis was made, but Case 12 was tested four months and again eight months after diagnosis. Table I indicates the chronological relationship between survival studies and previous transfusions, the nature and duration of specific therapy and the clinical state of the patient. No patients were transfused during the tests. Treatment in force at the start of the study was continued until its termination. Eleven patients died within five months of the time of the test and one patient is still alive.

Because of the natural history of acute leukæmia in adults, it was considered essential that the duration of these studies be limited to a period compatible with the demands of treatment, in respect particularly to transfusions. It was therefore decided to continue each for a period of seven days. Four patients died in a shorter period and they are not included here. In several instances it was possible without harm to prolong the study to 10 or even 14 days.

METHODS

The method used was a modification of the technique of Strumia *et al.*[5] Approximately 15 ml. of the patient's venous blood was withdrawn by syringe and injected into a sterile, siliconed, rubber-stoppered 100-ml. vial containing 5 ml. of ACD solution and about 100 microcuries of Cr^{51} as $Na_2Cr^{51}O_4$.* The mixture was allowed to stand at room temperature for 20-60 minutes, then 50 mg. of ascorbic acid was added in order to reduce the chromium remaining in the plasma to the trivalent form and thus to prevent further uptake of chromium by the red cells.[6] After thorough mixing, 10 ml. of chromated blood were drawn into a calibrated syringe and injected into the patient through the rubber tubing of a freely running intravenous infusion set. The remaining blood was used with a minimum of delay to determine the hæmatocrit value and to prepare samples of whole blood and plasma for radioactive counting at a later date.

The red cell volume at the start of the period of observation was calculated on the basis of radioactivity measurements made on a sample of venous blood withdrawn from the opposite arm 20 minutes after the injection. Subsequent blood samples for the estimation of red cell survival were withdrawn at intervals of one day, two days or three days for a minimum of seven and a maximum of 14 days. On the final day of the test, after the last blood sample of the survival series had been withdrawn, the procedure of the first day was repeated in order to measure the red cell volume at the end of the observation period.

The hæmatocrit values were measured in Wintrobe tubes after 30 minutes' centrifugation at 1000 G, an arbitrary correction for trapped plasma being made by subtracting 3% of the height of the red cell column. Four ml. aliquots of whole blood and plasma (diluted 1:100 and 1:25 respectively, in the case of pre-injection samples) were prepared from each sample of blood on the day of collection and stored at –20° C. in stoppered plastic vials. At the end of the period of observation radioactivity measurements were made with a well-type scintillation counter, all samples of whole blood and plasma from any one experiment being counted at a single sitting in order to eliminate the necessity of making corrections for radioactive decay. After correcting for background activity and for dilution, the activity of each sample of whole blood plasma was expressed as counts per second per ml. and the activity of 1 ml. of red cells was calculated from these data with the aid of the corrected hæmatocrit value.

The patient's red cell volume at the start of the experiment (day O) was calculated from the isotope dilution equation:

$$RCV_0 = \frac{\text{Total activity of red cells in 10 ml. of blood injected on day 0}}{\text{Activity of 1 ml. of red cells in blood drawn 20 min. after injection}}$$

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*The vials containing the ACD solution and the radioactive sodium chromate were obtained from Abbott Laboratories, North Chicago, Ill. The specific activity of the Cr^{51} was 1.5 microcuries per microgram for the first two tests and 12-25 microcuries per microgram for the subsequent 10 tests.

TABLE I.—CLINICAL STATE OF PATIENT, PREVIOUS TRANSFUSIONS AND CURRENT THERAPY AT TIME OF SURVIVAL STUDIES

Case number	*Clinical state during tests*	*Previous transfusions (1 bottle = approximately 380 c.c.)*	*Specific therapy during test*	*Degree of hæmolysis as measured with Cr^{51}*
1	Unchanged	None	None	Marked
2	Unchanged	2 bottles 15 days previously	None	None
3	Deteriorating	None	6 M.P.* 150 mg. per day from 3 days previously	None
4	Deteriorating	3 bottles 7 days previously	6 M.P. 150 mg. per day from beginning of test	Marked
5	Improving	2 bottles 14 days previously	6 M.P. 150 mg. per day from 14 days previously	Marked
6	Deteriorating	None	6 M.P. 150 mg. per day from 12 days previously	None
7	Deteriorating	None	6 M.P. 150 mg. per day from 21 days previously	Moderate
8	Deteriorating	6 bottles during week ending 10 days previously	6 M.P. 150 mg. per day from 16 days previously	Marked
9	Improving	None	6 M.P. 150 mg. per day and prednisolone 600 mg. per day from beginning of test	Marked
10 (a)	Unchanged	None	6 M.P. varying doses from 4 mo. previously, and prednisone 30 mg. per day from beginning of test	None
(b)	Deteriorating	1 bottle day before test	ACTH 25 mg. per day and 6 M.P. 48 mg. per day	Marked
11	Deteriorating	None	None	Moderate
12	Deteriorating	None	6 M.P. 150 mg. per day from beginning of test	Moderate

*6 M.P. = 6-mercaptopurine.

The red cell volume on the last day of the experiment was calculated from a similar equation in which the numerator is the activity of the red cells in the blood injected on that day, and the denominator includes a correction for the residual activity of 1 ml. of red cells in a sample of blood drawn immediately before this injection. The red cell volumes on the intervening days were estimated by linear interpolation between the initial and final volumes. The assumption of a linear increase or decrease in red cell volume may not be valid for some of the cases, especially those in which treatment was started before the test began and in which it is possible that alterations in red cell mass or degree of hæmolysis may have begun during the period of observation.

The percentage survival of red cells on any given day was calculated from the equation:

$$\%\ \text{survival} = \frac{(\text{activity of 1 ml. of red cells on day } N) \times \text{RCV}_N \times 100}{\text{Total activity of red cells in 10 ml. blood injected on day 0}}$$

where RCV_N represents the measured or estimated red cell volume on day N.

The routine hæmatological studies were carried out by Dr. W. H. Perry.[7]

RESULTS

The survival curves shown in Figs. 1 and 2 are plotted on semilogarithmic paper. The stippled area on each plot represents the normal range. The upper limit of this area is a line constructed from the formula of Eadie and Brown:[8]

$$N = N_0\left(1 - \frac{t}{T}\right)e^{-kt}$$

where N = radioactivity count on day t.
N_0 = corresponding count on day O.
T = potential life span of red blood cells = 120 days.
k = elution rate of chromium from red blood cells = 0.01[2].

Such a formula gives a half-life of red cell radioactivity of 35 days and this would appear to be maximal for this method. The lower limit of the stippled area is a line corresponding to a half-life of red cell radioactivity of 24 days, which was arbitrarily chosen as being the lower limit of normal. The actual half-life as determined by Necheles *et al.*[2] falls within this range. Patients whose survival curves by this method indicated a half-life of 14 to 24 days were considered to have moderate impairment of survival and those with a half-life of less than 14 days were considered to have marked impairment of survival.

Of the 12 cases studied, three had survivals falling within the normal range as here defined. Three showed moderate reduction in survival and five showed marked reduction. The remaining patient (Case 10) had a normal survival time on the first test and a markedly reduced survival time four months later.

The rate of fall of hæmoglobin value could be expected to give a rough indication of hæmolysis in the absence of hæmorrhage, but this would depend not only on the hæmolysis but also on the ability of the marrow to respond to the anæmia, since even with a moderately severe hæmolysis a

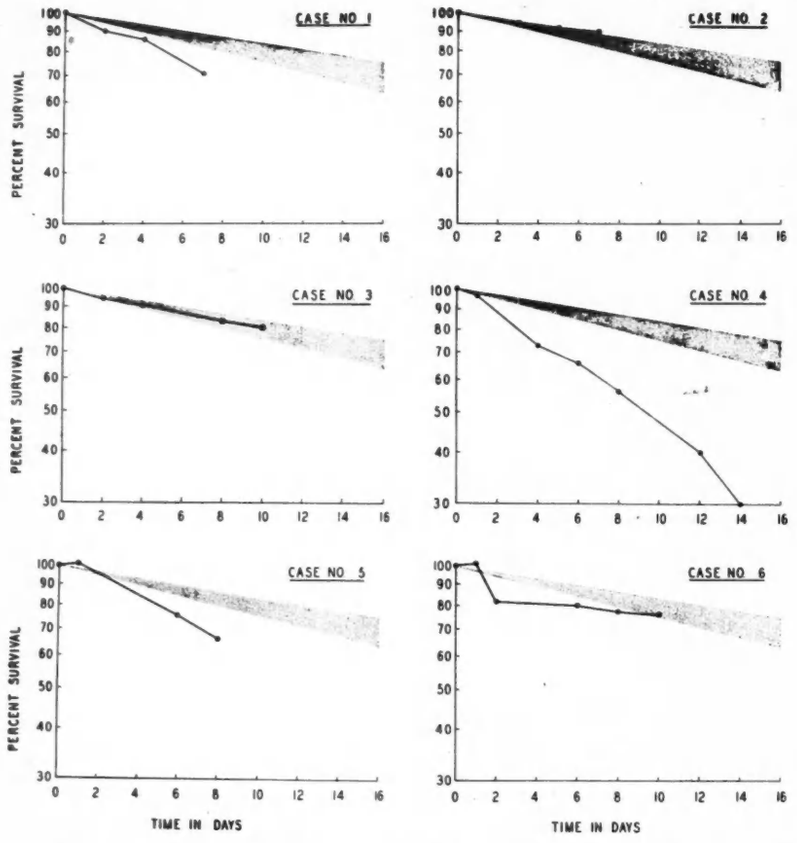


Fig. 1.—Red cell survival curves in Cases 1-6. The range of normal is represented by the stippled area.

vigorously reacting marrow may more than compensate. In the cases studied there was a close correlation between the rate of fall of hæmoglobin and the results of the survival studies. All cases with moderate or marked reduction in survival time showed a fall in hæmoglobin value in excess of 5% per week. Three of the four cases with no decrease in survival time showed falls in hæmoglobin value of less than 5% per week. Only one case violated this general trend, and in this instance the hæmoglobin value fell 8% per week. This was due to an increase of plasma volume from 2120 ml. to 2640 ml. associated with a decrease in red cell volume from 730 ml. to 670 ml.

Reticulocyte counts were elevated above 2% in three cases but when absolute numbers of reticulocytes were calculated they were found in all instances to be within the limits of normal. Macrocytosis of some degree was constant and did not seem to be related to the degree of hæmolysis. The presence of nucleated red cells, target cells, polychromasia, basophilic stippling and Howell-Jolly bodies, and the level of bilirubin could not be correlated with the results of the survival studies.

Hæmolysis was not more frequent in patients with clinical enlargement of the spleen and liver. The cellularity of the bone marrow was usually increased, but the increase was due to large numbers of blast cells and not to an increase in erythroid elements. Two cases showed slight qualitative changes in the red cell precursors, suggestive of folic acid deficiency. The direct Coombs test was negative in the nine cases in which it was performed, indicating that within the limits of this test no circulating immune bodies were present.

Red cell volume (Table II) declined in all cases during the period of observation. In the four cases with normal survival times this decline was slight, and in all but one of those with marked shortening of survival time it was of considerable magnitude, varying between 11% and 60%. In 11 instances the plasma volume expanded to compensate for the reduction in red cell volume. The

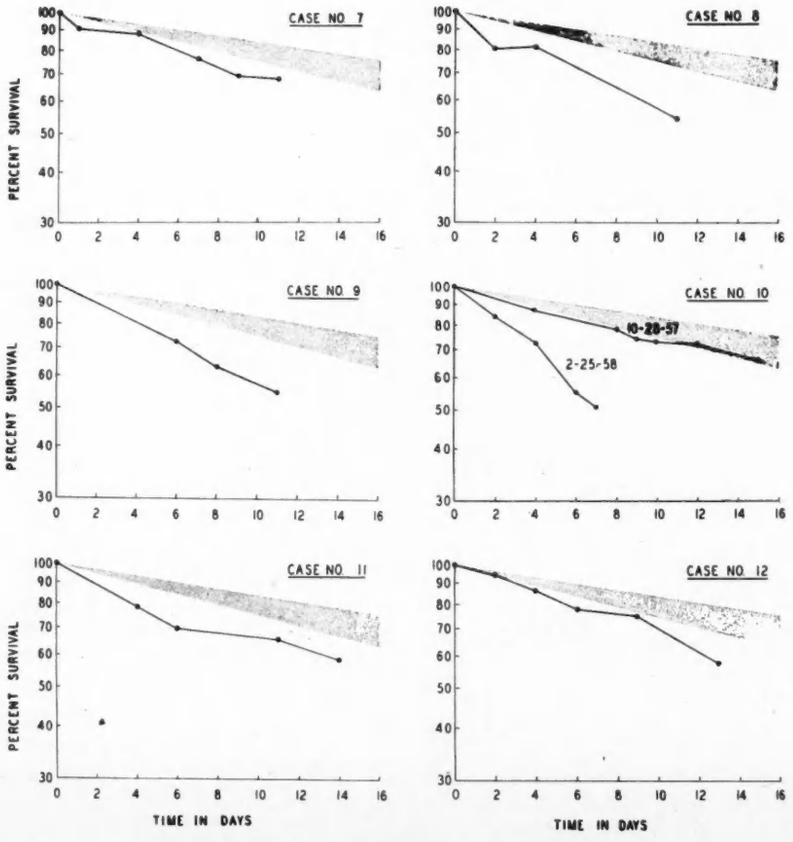


Fig. 2.—Red cell survival curves in Cases 7-12.

TABLE II.—CHANGES IN RED CELL VOLUME, PLASMA VOLUME AND TOTAL BLOOD VOLUME AS BETWEEN START AND FINISH OF TEST INTERVAL

Case No.	*Interval (days)*	*R.B.C. vol.*	*% change*	*P. Vol.*	*% change*	*Total B.V.*	*% change*	*Reduction in Cr^{51} survival*
1	7	1000		2590		3590		
		890	−11	2990	+15	3880	+8	Marked
2	7	600		1900		2500		
		510	−15	1770	−7	2280	−9	None
3	10	730		2120		2850		
		670	−8	2640	+24	3300	+16	None
4	14	970		3160		4130		
		390	−60	3590	+14	3980	−4	Marked
5	8	890		2500		3390		
		710	−20	2500	0	3210	−5	Marked
6	10	760		2600		3360		
		730	−4	3250	+25	3980	+18	None
7	11	2500		3800		6300		
		1900	−24	4100	+8	6000	−5	Moderate
8	11	1500		3300		4800		
		900	−40	5200	+58	6100	+27	Marked
9	11	530		2430		2960		
		330	−38	2760	+14	3090	+4	Marked
10	15	1440		2980		4420		
		1370	−5	3510	+18	4880	+10	None
	7	1190		3310		4500		
		810	−32	3920	+18	4730	+5	Marked
11	14	860		2680		3540		
		840	−2	2840	+6	3680	+4	Moderate
12	13	850		3550		4400		
		740	−13	4280	+21	5020	+14	Moderate

degree to which this phenomenon occurred was irregular, and the total blood volume therefore underwent changes in both directions, exceeding 10% in five cases. The patient in Case 8, in which very marked change in blood volume was noted, was developing clinical signs of cardiac failure during the test period. This undoubtedly contributed to the expansion of plasma volume.

DISCUSSION

It is apparent from these curves that significant data can be obtained by this method used over the short periods permissible in this rapidly progressive disease. The curves show a satisfactory degree of internal consistency and where prolonged to 10 or 14 days showed no tendency to deviate importantly from the early trend. While minor degrees of hæmolysis might escape detection because of so brief a period of observation, it is evident that the method is sensitive enough to show hæmolysis not brought out by other laboratory procedures.

As was pointed out by Strumia *et al.*[5] and emphasized by Turnbull, Hope and Verel,[9] the decline of radioactivity in the blood after tagging is an index of disappearance of red blood cells from circulation only if the red cell volume remains constant during the procedure. While such an assumption might be made for normal persons, it cannot be made for persons with diseases calculated to alter the red cell volume. Where complete failure of erythropoiesis is present, the circulating chromium tagged cells cannot be diluted by new cells and their original concentration will be maintained during the period of observation, giving the illusion that no cells are being destroyed. On the other hand, very rapid regeneration of red blood cells will so dilute the chromium as to give a rapid disappearance rate and suggest marked hæmolysis which does not exist. It is essential, therefore, to estimate blood volume at the beginning of the test and again at the end.

The presence of hæmolysis did not seem to be obscured by previous transfusions, since significant decrease in survival time was noted in four of five cases receiving transfusions within a month. It is probable that the mechanism responsible for the hæmolytic process affects the transfused as well as the autochthonous cells.[10, 11]

SUMMARY AND CONCLUSIONS

The radioactive chromium method for studying red cell survival is applicable to short-term observations in acute leukæmia where more prolonged studies would be impractical because of the necessary demands of treatment including transfusions. The curves obtained are sufficiently consistent within themselves to be significant.

It is essential that the red cell volume be measured at the beginning and at the end of the studies in order that the survival curve may be corrected for alterations in red cell volume occurring during the experiment.

About two-thirds of the 13 cases studied showed a moderate or marked reduction in red cell survival.

No correlation is apparent between the results of the survival studies and those of other laboratory tests used to indicate hæmolysis.

The rate of fall of hæmoglobin value is closely related to the red cell survival.

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RÉSUMÉ

Par la simplicité de son emploi, le chrome radioactif permet la détermination de la survie des globules rouges dans les cas de leucémie aiguë où les exigences du traitement, y compris les transfusions, s'opposeraient à l'application de méthodes plus élaborées. Les courbes obtenues sont suffisamment uniformes pour qu'on en puisse tirer des conclusions. Il est essentiel de connaître le volume de la masse sanguine au début et à la fin de la détermination de survie afin de tenir compte des écarts que pourrait subir le volume total des érythrocytes pendant cette expérience. Le Cr^{51} ne permet de conclure qu'à raison d'un taux de remplacement des érythrocytes égal à celui de leur destruction. Les résultats peuvent être faussés dans les cas où la moelle est aplasique, ou dans ceux oú la spoliation ou l'hémolyse sont si élevées que l'érythropoïèse ne peut compenser.

Les deux tiers environ des 13 cas étudiés dans cet article présentaient une diminution modérée ou prononcée de la survie des érythrocytes. On n'a découvert aucune corrélation entre les résultats de la détermination de la survie et ceux des épreuves employées dans le dépistage de l'hémolyse. Le taux de chute de l'hémoglobine suit de près celui de la survie des globules.

MYOCARDIAL NUTRITION AFTER THE IVALON SPONGE OPERATION
THE RETURN OF A 400 MILLION YEAR OLD SYSTEM

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TODAY in our laboratories, as a result of our experiences with the ivalon sponge operation for the relief of myocardial ischæmia caused by coronary artery narrowing or occlusion, certain very strange questions are being asked.

Is it possible to turn the mammalian heart back over the æons into a primitive heart capable of surviving in a primitive way without coronary arteries? An example of such a primitive heart is to be found in the systemic heart of the hagfish, which has no coronary arteries but receives its nutrition directly from the ventricular lumen, i.e., by endocardial nutrition via channels which originate in the lumina of the heart to enter the heart wall through channels which lie between trabeculated bundles of muscle fibres. The ventricular blood rises and ebbs, flowing from the ventricular cavity into the heart wall via this veritable spongework of vascular spaces, there to nourish by direct contact the primitive myocardial fibres.

Does the mammalian myocardial fibre inherit a four hundred million year old memory so that, given a proper stimulus, it likewise can take its nutrition directly from the ventricular cavity by loosening its own compact structure to one which is more trabeculated, and by opening up long unused channels connecting the ventricular cavity to the interior of the heart wall?

Is it possible that the myocardial network of vessels can so rearrange themselves within the myocardial muscle framework that they form a true sponge-like network of spaces and vessels which communicate not only with one another but also with extracardiac vessels, coronary arteries and veins, and with the ventricular lumen itself?

These and many other questions are now being studied by us in Montreal.

It all started in 1954. The senior author, while watching the ocean from a beach on the South Atlantic, wondered about the whole problem of coronary artery disease. As he looked out on the vast, limitless ocean, many thoughts and ideas took shape. Surely out there in the depths of the sea was an answer to the problems of revascularization surgery in the treatment of coronary artery insufficiency. Practically, there must be something in the evolutionary past of the human race which might be of assistance, particularly since, at some time, many millions and perhaps billions of years ago, the earliest progenitor of the human race crawled out of the waters. While he was thus ruminating, the idea developed which has resulted in the past three years of active experimental study. Perhaps one could supply a framework between the myocardium and pericardium through which hundreds of small vessels could grow, much in the same way as a gardener places screens above plants to guide their growth, or alongside vines to facilitate their upward extension. Perhaps something with small canaliculi, such as the coral or the sponge, might well be of help.

Constantine was set to work on this problem in the fall of 1956. Various types of coral formations were examined after being ground up. On examination of these it was decided to abandon the use of coral because the canaliculi were too small. Various types of marine sponges were then studied, and a method of making sponge dust which would pass through a 60-mesh sieve was developed. A silicaceous type of sponge was used so that its contained silicate particles would abrade the serous layers of the pericardium and permit blood vessels to grow through the canaliculi of the sponge. Unfortunately, when the sponge powder was placed in a dog's pericardium, there was a very marked reaction which usually resulted in the death of the animal. Constantine also used thin slices of marine sponge applied to the surface of the left ventricle, with similar results.

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This work has been carried out in the Laboratories of the Department of Experimental Surgery of McGill University, and the Institute of Cardiology of Montreal. It has been financed through generous federal and provincial grants.
The angiocardiographic x-ray studies have been carried out by Dr. Jules Laberge of the Institute of Cardiology of Montreal, and the pathological and histological studies under the direction of Dr. G. C. MacMillan, Professor of Pathology, McGill University.

One day, in a discussion of this problem with Deliyannis[1] who was to continue Constantine's work, the former suggested the use of ivalon sponge placed upon the heart in thin sheets. It was thought that since ivalon sponge is an inert substance, it would offer an ideal framework to guide the growth of blood vessels from pericardium to myocardium. In order to obtain the proper state for such a growth of vessels, at least three conditions were considered necessary:

1. Myocardial ischæmia had to be created.

2. It would be necessary to remove the serous lining of the fibrous pericardium and the epicardial covering of the left ventricle.

3. The ivalon sponge sheet must be sufficiently thin to permit blood vessels to bridge the gap between the denuded pericardium and the heart muscle.

To produce myocardial ischæmia, ameroid constrictors were placed around the origins of the anterior descending and circumflex branches of the left coronary artery. In previous experiments such constrictors have been tested and proved to narrow the coronary vessels very materially, causing a very high mortality rate in control animals. Removal of the epicardium and serous pericardium was carried out by Deliyannis, using a Beck scraper. Then 1/16 in. (1.6 mm.) sheets of ivalon sponge were placed upon the front and back of the heart, where they were held in position by a few stitches of interrupted silk.

Thus, the ivalon sponge operation was subjected to the ameroid coronary artery constriction test, which has been previously described. The survival figures for Deliyannis' series of ivalon sponge and ameroid constriction of the two main left coronary arteries in animals are shown in Table I. It should be made clear immediately that all animals in which wound infection developed, or where fluid was found in either pleural space at autopsy, were not included in the control or treated series. The same precautions which have been previously described for the use of the coronary artery ameroid constrictors were strictly adhered to. In this way, a better picture of the value of the ivalon sponge operation in protecting hearts against coronary ameroid constriction death could be obtained.

A total of 54 animals were operated upon. Of these 25 were control animals, and 29 were treated. After excluding those animals with complications from both the control and treated series, a total of 20 control animals and 22 treated with ivalon sponge was studied. All but two of the control animals died within a period of 18.8 days, all apparently from myocardial ischæmia.

Of the animals treated with ivalon sponge, 19 survived for three months or longer. All of these were studied, some before and all after being sacrificed (see Table I). It is obvious that direct application of ivalon sponge sheets to the bared myocardium resulted, in certain cases, in the development of some type of extracoronary blood supply sufficiently large to relieve the ischæmia of the left ventricle caused by the constricting ameroids.

TABLE I.—AMEROID CONSTRICTION TEST OF IVALON SPONGE OPERATION

All animals had petrolatum-coated ameroid constrictors placed on anterior descending and circumflex branches of the left coronary artery	*No. of animals*	*No. of deaths*	*Average No. days survived postoperative*	*Sacrificed*			
				Illness		*Study*	
				No. of animals	*Average days postoperative*	*No. of animals*	*Average days postoperative*
Control	20	18	18.8	2	26	—	—
Ameroid constrictors plus ivalon sponge	22	3	45.0	—	19	—	255



Fig. 1.—Photomicrograph of section of heart of Animal No. 838 showing sponge spaces lined by endothelium and containing red blood cells. This sponge had been on an ischæmic heart for 176 days.

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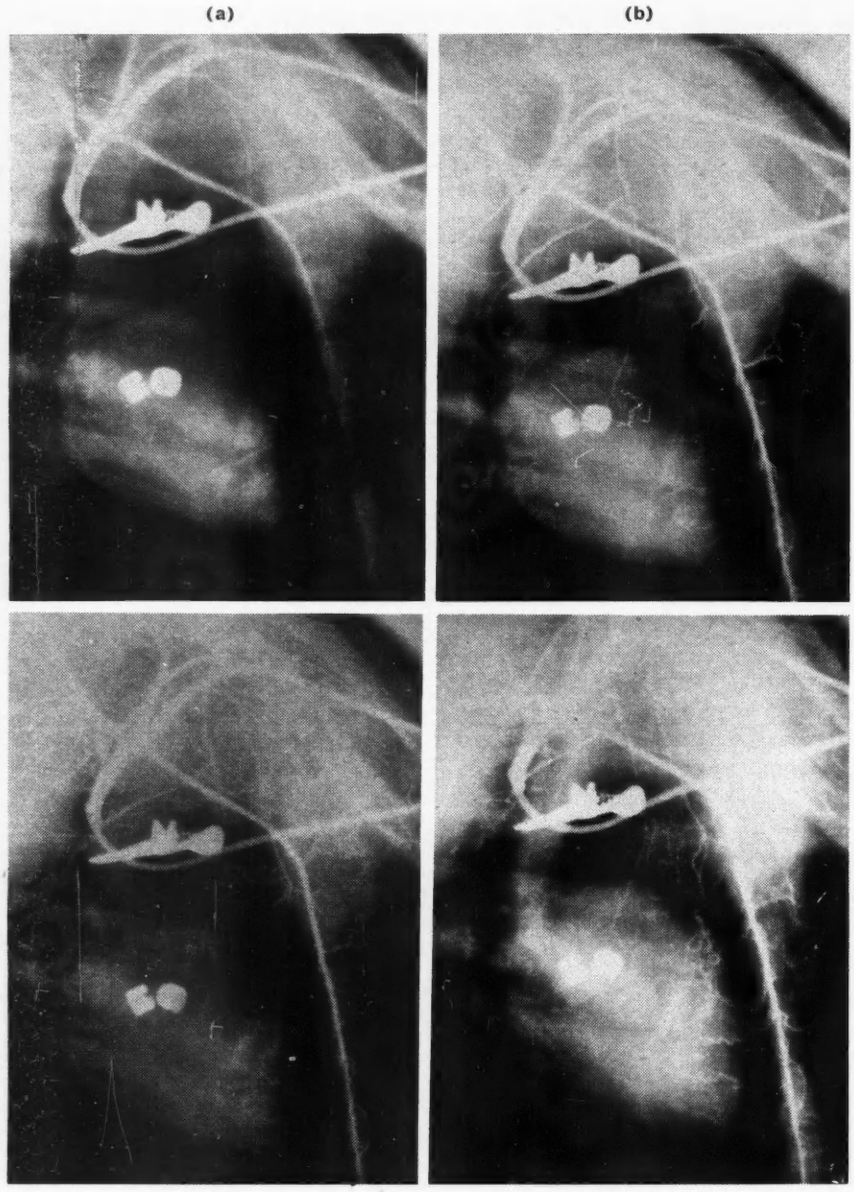


Fig. 2.—Roentgenogram of Animal No. 711. Ameroid constrictors placed on anterior descending and circumflex arteries with sponge on left ventricle, January 31, 1958. Animal studied February 3, 1959 by injecting radiopaque dye through the left subclavian at its origin. (a) Control. (b) Shows opacification of numerous tortuous branches from branches of the axillary, subclavian and internal mammary arteries which converge in the region of the left ventricle. (c) Shows suspicious area of opacification on anterior wall of left ventricle with faint opacification of anterior descending branch. (d) Definite opacification of area in left ventricle.

DEMONSTRATION OF DEVELOPMENT OF NEW CARDIOVASCULAR CHANNELS AFTER IVALON SPONGE OPERATION

1. *Endothelial-lined spaces within sponge interstices containing red blood cells.*—The first question to be answered concerned the presence of blood vessels within the interstices of the ivalon sponge network. That these existed was clearly demonstrated by studying hearts covered with ivalon sponge 3 to 14 months after survival from ameroid coronary artery constriction. To settle the question whether there were blood spaces within the sponge network, the animals were anæsthetized and allowed to die from anoxia. The great vessels were then tied, and the heart was placed in formalin, so that whatever blood was present would remain within the sponge interstices. It should be noted that the sponge, at the end of a year, remained soft and pliable. Although there was some regrowth of fibrous tissue, there were still large numbers of spaces within the sponge lined by endothelial cells and containing red blood cells (Fig. 1). Having established the presence of endothelium-lined spaces containing red blood cells within the interstices of the ivalon sponge, our next task was to discover the connections of these blood-containing spaces.

2a. *Evidence for extracardiac blood supply via pericardial sponge-myocardial arterial anastomoses* (subclavian artery angiosponge myocardiogram).— Animals that had survived ameroid constriction of the two main coronary arteries because of the ivalon sponge operation were studied 6 to 14 months after operation. The left chest was opened and the left subclavian artery ligated at its aortic origin and cannulated distal to the point of ligature. In this way, the subclavian artery and all its branches could be injected in order to outline the pericardiophrenic intercostals and other arteriolar branches of this vessel which supply the pericardium. Serial x-ray studies of such injections have been carried out by Laberge. By special fast cassette film studies it has been possible to follow the radiopaque dye down the branches of the left subclavian artery, including the internal mammary artery and its branches, into the region of the heart. In at least three of these studies in three different animals, x-rays have visualized areas of dye concentration in the region of the apex and left ventricular wall. These radiopaque concentrations have been considered by Laberge to be accumulations of the dye in the sponges which were resting between the myocardium and pericardium. In other words, the radiopaque dye injected into the left subclavian artery outlined a multitude of vessels which were running to the pericardium and which ended by entering and filling the sponge interstices, that is, pericardio-sponge anastomotic arterial channels (Figs. 2a, 2b, 2c and 2d).

2b. *Pericardial-ivalon sponge myocardial arterial anastomoses.*—Now, just because the radiopaque dye appears to have entered the ivalon sponge after

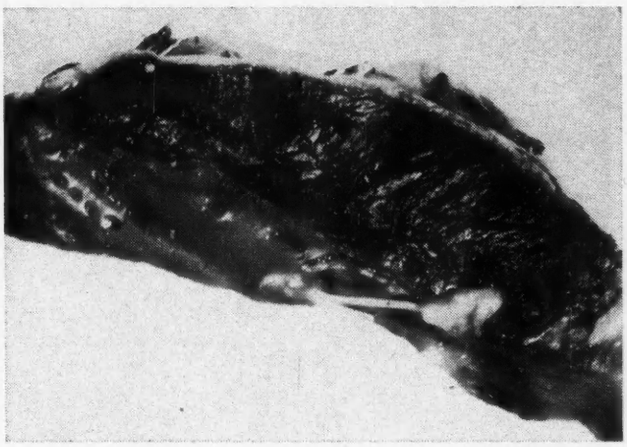


Fig. 3.—Photograph of channels filled by India ink injection made through left subclavian in Animal No. 685, in which ameroid constrictors were placed around anterior descending and circumflex vessels, and sheets of ivalon sponge placed upon surface of left ventricle eleven months previously. Note concentration of vessels in region of sponge and filling of sponge holes by India ink.

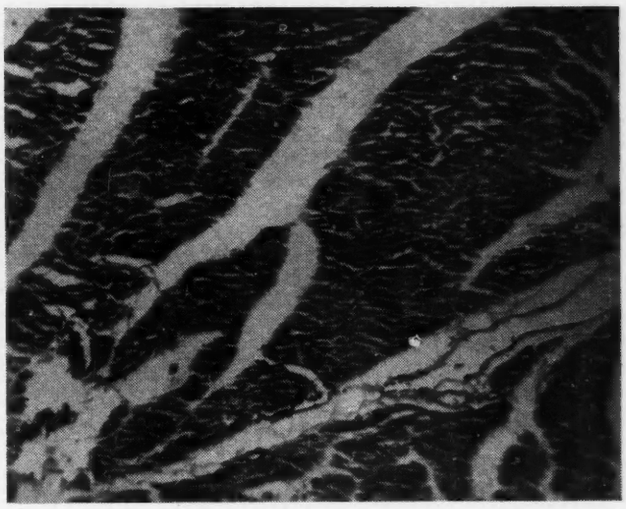


Fig. 5.—Photomicrograph of left ventricle showing India ink in heart, capillaries and sinusoids injected through left subclavian arteries via ivalon sponge.

injection of the subclavian artery, and because there are blood channels within the sponge interstices containing red blood cells, this does not prove that blood channels exist between the sponge and the myocardium. Thus, in those animals studied by subclavian angio-spongiograms after the animal had been sacrificed, the left subclavian artery was injected with India ink in the same manner as the radiopaque dye was injected during life, except for the fact that all the branches to head and forearm were first ligated. The India ink could be followed as it filled numerous vessels running to the pericardium, and it was possible to see what appeared to be areas in the sponge which were likewise filled with the injection mass. Upon opening the aorta and left ventricle, India ink was seen to have traversed the entire thickness of the left ventricular wall to appear in the left ventricular lumen. These same experiments have been repeated after first isolating and tying all the great vessels, namely the pulmonary veins, pulmonary artery, superior and inferior venæ cavæ, and the aorta at its origin, so that when the injection was made in the left subclavian artery there were no channels other than those entering the pericardium and traversing the sponge into the myocardium which could be injected (Fig. 3). Again, in this experiment, the India ink was observed to enter the pericardial vessels and then the sponge (Fig. 4), and on cross-section of the ventricle it was found to be in the wall of the left ventricle (Fig. 5), thus establishing without doubt the existence of pericardio-sponge myocardial anastomotic channels.

3. *Coronary artery-sponge myocardial anastomoses.*—Coronary artery-sponge myocardial anastomoses have been demonstrated on many animals by injecting the anterior descending and circumflex arteries distal to the points of ameroid occlusion with the Bellman-Frank mass. The mass enters the sponge network, but none appears to have gone beyond the sponge out into the pericardial vessels (Fig. 6). This may be due

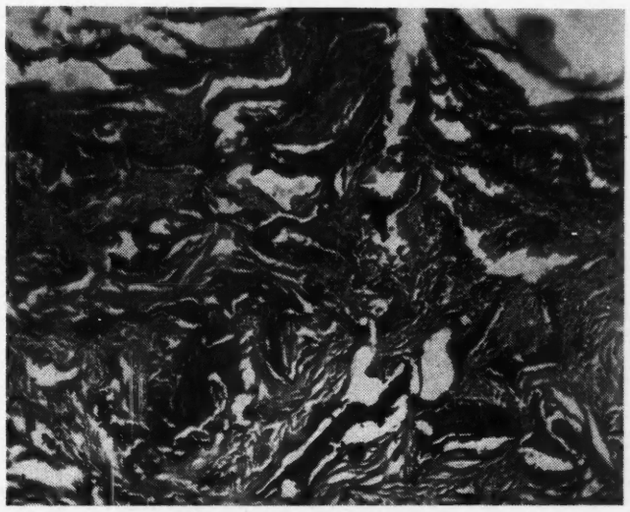


Fig. 4.—Photomicrograph of section through ivalon sponge showing India ink injected through left subclavian artery in Animal No. 659.

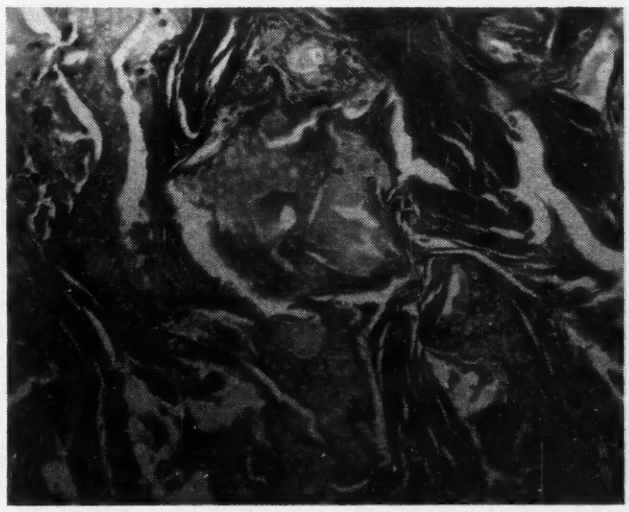


Fig. 6.—Photomicrograph of Animal No. 711 showing Bellman-Frank mass lying in sponge interstices after injection into coronary arteries distal to points of ameroid constriction.



Fig. 7a.—Radiograph of normal animal's heart after injection of Bellman-Frank mass through right and left coronary arteries. Note irregular pattern of ventricular wall arterioles with occasional arterio-luminal vessel.

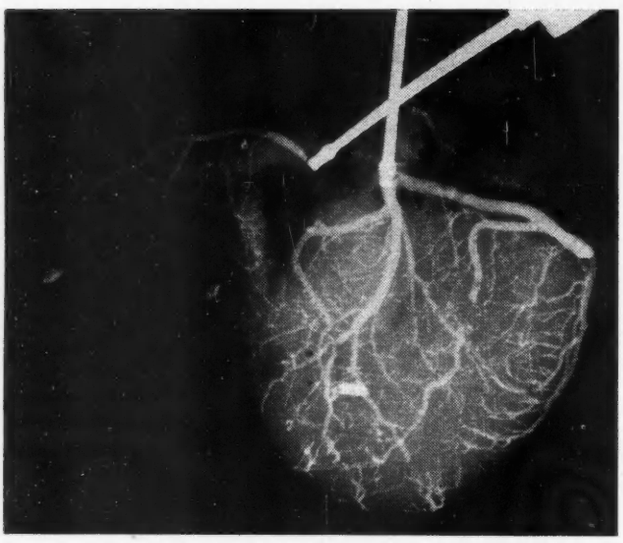


Fig. 7b.—Radiograph of same heart unrolled.

to the fact that the injection mass rapidly fills the arteriolar system of the left ventricle and appears in the left ventricular lumen, projecting through many lumina. X-ray studies of such injections have been made, and a strange arrangement of arteriolar vessels has been disclosed.

4. *Development of arterio-luminal vessels, homo-coronary and intercoronary anastomoses by ivalon sponge operation.*—When the left ventricular arteriolar system is injected through the anterior descending and circumflex arteries with the Bellman-Frank mass in normal hearts, a few vessels are seen to enter the left ventricular lumen, but for the most part the arteriolar architecture in the myocardium of the normal heart is arranged in an irregular mosaic of semicircles, etc., with

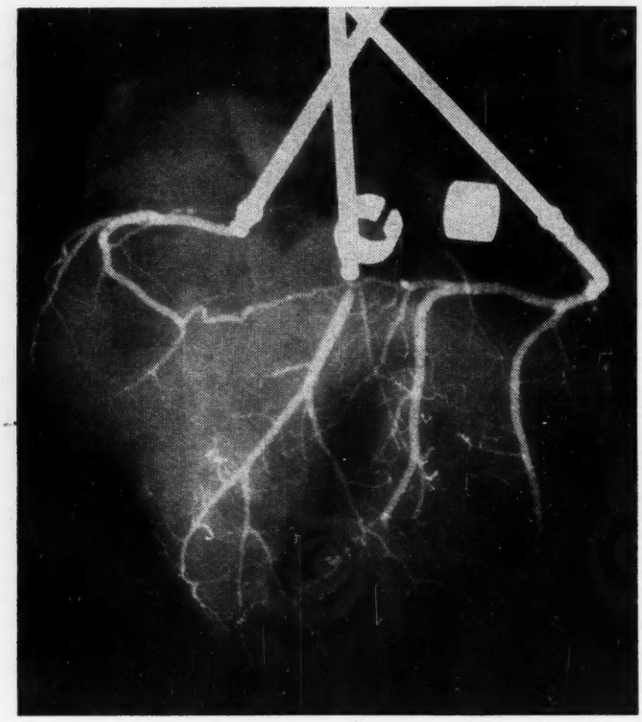


Fig. 8.—Radiograph of injected arteriolar network of heart of Animal No. 454, which underwent the Beck I operation. This animal died from myocardial ischæmia created by ameroid constriction of both left coronary arteries. Note few intercoronary and numerous homo-coronary anastomoses and only the occasional arterio-luminal vessel.

some homo-coronary anastomoses and a few intercoronary anastomoses (Fig. 7). When a similar study is carried out distal to the points of ameroid narrowing of the anterior descending and circumflex coronary arteries in animals that have died, the picture is about the same except for the development of a few more intercoronary anastomoses (Fig. 8). The same is true of injection studies made upon animals that have died from ameroid constriction following the Beck I operation or, for that matter, in animals surviving ameroid constriction with coronary artery partial ligation and internal mammary artery implantation. The implant, when injected, fills the entire left coronary artery tree, but few if any of our studies over the years show the injection mass outlining the vessels heading for the ventricular lumen. In all the sponge-treated hearts of animals that have died or survived ameroid constriction of the two main left coronary arteries, injection studies reveal parallel rows of vessels which leave the surface coronary arteries and appear to run directly into the left ventricular lumen (Figs. 9a and 9b). These are extremely numerous and are noteworthy not only because of their arrangement, which is at right angles both to the inner and outer surface of the two ventricles, but because of their numbers and the frequency with which they anastomose with one another.

Histological studies of these sponge-treated hearts reveal the presence of a rather large number of vessels which, starting in the region of the sponge, can be followed directly into the ven-

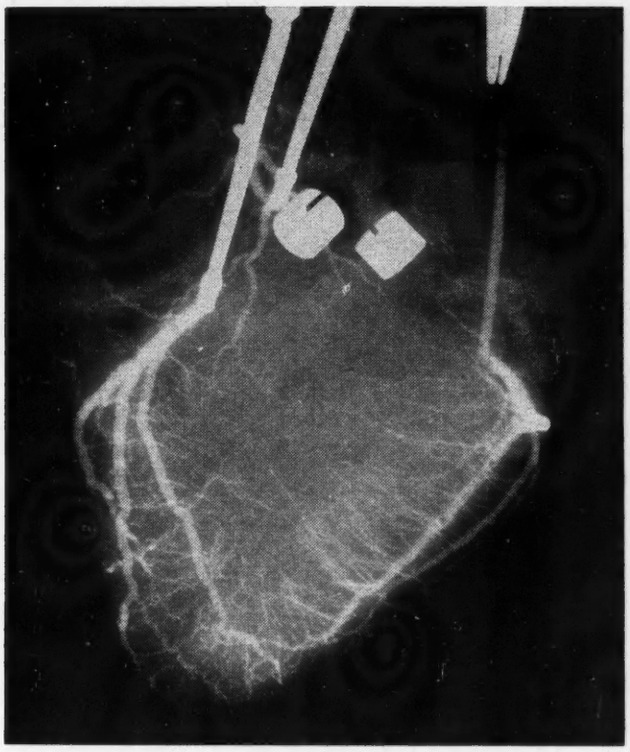


Fig. 9.—Roentgenogram of ivalon sponge in heart of Animal No. 435, in which the anterior descending and circumflex arteries were injected with Bellman-Frank mass distal to ameroid constriction and right coronary artery. (a) Intact heart showing numerous vessels leaving surface of coronary arteries running toward the ventricular lumen. Note the number of these and their tendency to palisade and form numerous intercoronary anastomoses.

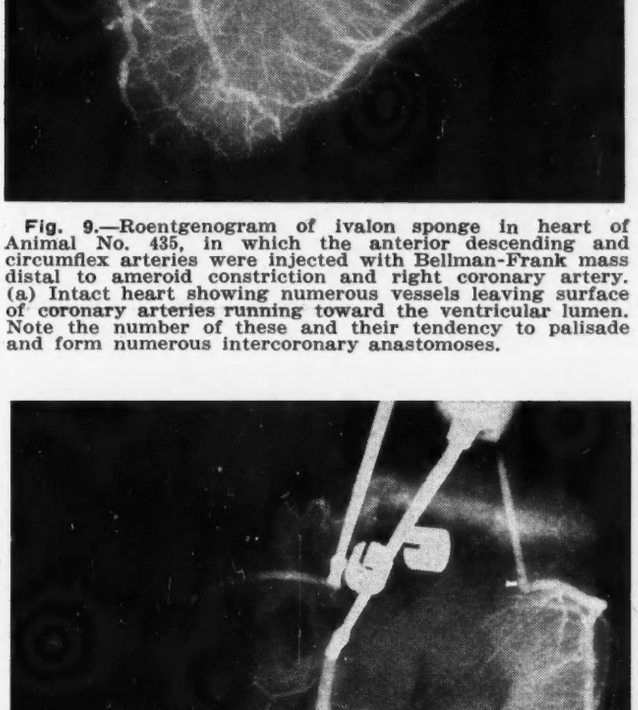


Fig. 9b.—Same heart unrolled.

tricular lumen (Fig. 10). Others leave the sponge area and lose their arterial character to merge with endothelial-lined spaces lying between myocardial muscle bundles (Fig. 11) (myocardial sinusoids). Perhaps the most unusual characteristics of these hearts is the looseness of the myocardial fibre arrangement. A comparison between the myocardial fibre arrangement in a normal heart and in a sponge-treated heart is shown in Figs. 12 and 10.



Fig. 10.—Low power histological section of the heart of Animal No. 685, showing numerous communications between surface of left ventricle in the region of the sponge and the left ventricular lumen. The sponge contains Schlesinger mass injected through the anterior descending coronary artery distal to the point of ameroid constriction.

5. *Venous sponge myocardial and pericardial anastomoses.*—Retrograde injection of the coronary sinus with India ink showed ink in the pericardium and in the sponge, and where the sponge was in contact with the myocardium the India ink entered the left ventricular wall. Thus the venous tributaries of the coronary sinus appear to have formed connections with vascular spaces within the sponge.

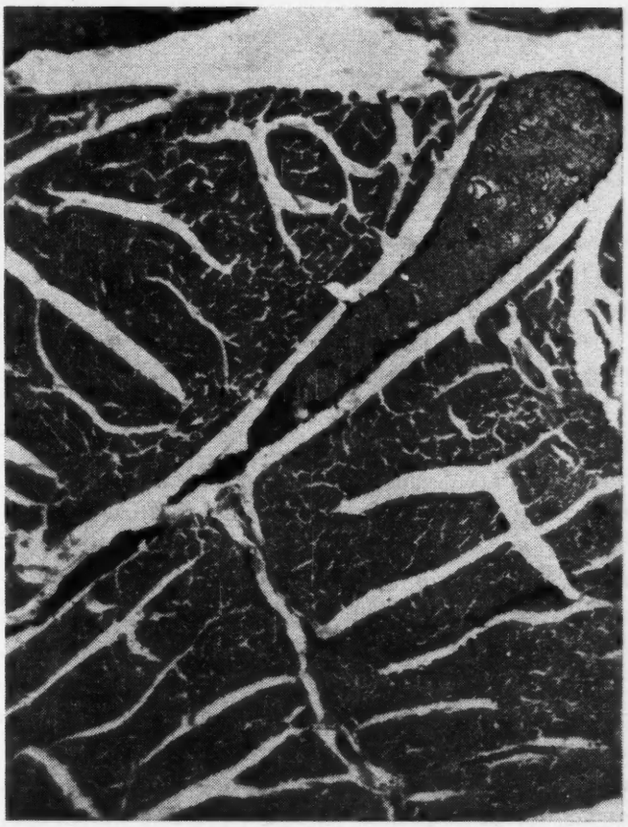


Fig. 11.—High power photomicrograph of heart of Animal No. 685 showing Schlesinger mass in large myocardial sinusoid with India ink which had previously been injected through the left subclavian artery.

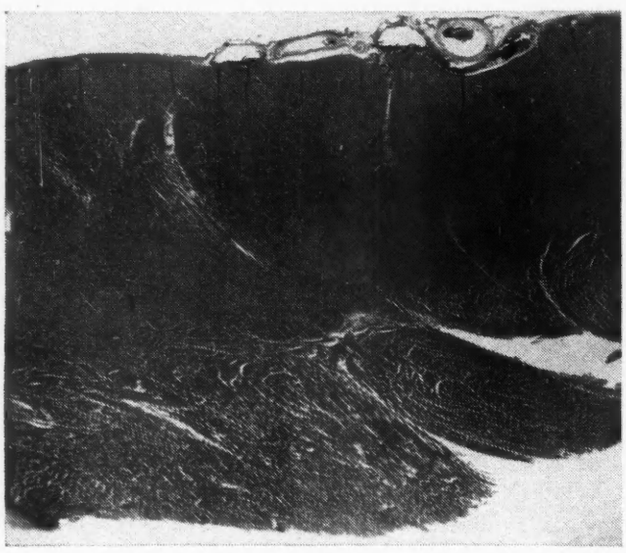


Fig. 12.—Photomicrograph showing arrangement of muscle fibres of myocardium in normal heart. (Fig. 10 shows sponge-treated heart.) Observe what appears to be innumerable openings from the left ventricular lumen into the left ventricular wall. Perhaps these are enlarged Vieussens' arterio-luminal vessels.

TURNING THE HEART BACK THROUGH THE AGES

Originally we had hoped that by placing thin sheets of ivalon sponge on a bared myocardium in direct contact with myocardial sinusoidal spaces on one side and the exposed vessels of the pericardium on the other, vessels would grow from the pericardium through the sponge into the myocardium when there was myocardial ischæmia. This apparently occurs in our animals treated by ivalon sponge and ameroid coronary artery constrictors. However, other changes have occurred which seem to be associated with the sponge-like network being left in contact with the heart-muscle. Some of these changes are as follows:

(a) Parallel rows of arterioles develop, connected with the coronary arteries and appearing to enter the left ventricular lumen.

(b) Myocardial fibres loosen, so that histological sections give the appearance of separated muscle fibres and bundles somewhat similar to that seen in an œdematous heart.

(c) The ivalon sponge spaces appear to re-enact the condition existing within the primitive heart, and this state seems to be conveyed to the underlying myocardium, so that extracardiac coronary, venous and luminal vessels — both venous and arterial — all communicate within the interstices of the sponge, but not necessarily with one another.

In order to understand what occurs after the myocardial sponge operation, we have reviewed the literature and have gone over our own data collected during the past 14 years concerning the arrangement of the various vascular channels within the human heart and the animal heart, and have been led back to an old-new concept.

THE ARTERIOLES OF VIEUSSENS

In the year 1706, Vieussens[2] described openings in the lumen of the left ventricle which disappeared into the left ventricular wall. He injected the left coronary artery with saffron dye dissolved in spirit, and this appeared in the left ventricle emerging from one of these openings. He considered these openings in the lumen of the left ventricle to be direct branches of the main coronary artery which emptied into the lumen of the left ventricle. Thebesius, two years later, in 1708,[3] described openings in the walls of the ventricles and auricles which connected with the coronary veins. Since Thebesius's communication, openings leading from the lumen of the heart chamber have been referred to as the *Thebesian canals*. A few workers attempted to confirm the presence of arterial luminal vessels as described by Vieussens and, having failed to do so, concluded that they did not exist. Thus, for many years, openings from the lumen of the ventricles have been considered to be Thebesian canals, and the arteriolar luminal vessels of Vieussens were almost completely forgotten until Wearn *et al.*[5-8] became interested in the vascular spaces and vessels within the heart wall. These brilliant workers outlined the coronary artery network by injecting a celluloidin mass into the left coronary artery, at the same time filling the left ventricle with celluloidin of a different colour. The heart muscle was digested away by hydrochloric acid, and the resultant cast showed anastomoses between the injected arteriolar network and the cast mass which had filled the left ventricle.

Similar studies were made by injecting the coronary sinus. In some instances a digestive cast was not made but serial histological sections were taken instead and a wax model of various vascular channels was built up.

Complete details of how Wearn reached his conception of the myocardial circulation are beyond the scope of this article. The essential points of his work must be mentioned because they are so extremely fundamental to an understanding of the myocardial circulation as we at McGill know it.

Commencing with arterial channels, Wearn has shown that there are two definite groups of vessels which serve as communicating channels between the coronary arteries and the heart chambers. The first of these are known as the arterial-luminal vessels (Fig. 13), and the second have to do with the arterial-sinusoidal vessels (Fig. 14).

ARTERIO-SINUSOIDAL VESSELS AND MYOCARDIAL SINUSOIDS

Arterio-sinusoidal vessels are branches of coronary arteries which gradually lost their original character through changes in their walls due to the loss of the media, thinning of the intima, and the gradual disappearance of the



Fig. 13.—Photograph of a wax plate reported by Wearn (8) which represents reconstruction of a section of a human left ventricular wall near the apex, in which is shown the common opening (CO) through which serial "arterio-luminal" vessels and myocardial sinusoids open into the lumen of the ventricle. Several intertrabecular spaces (IS) are shown. The wax has been dissected away to show the arteries A1, A3 and A4 which communicate with the cavity through the common openings.

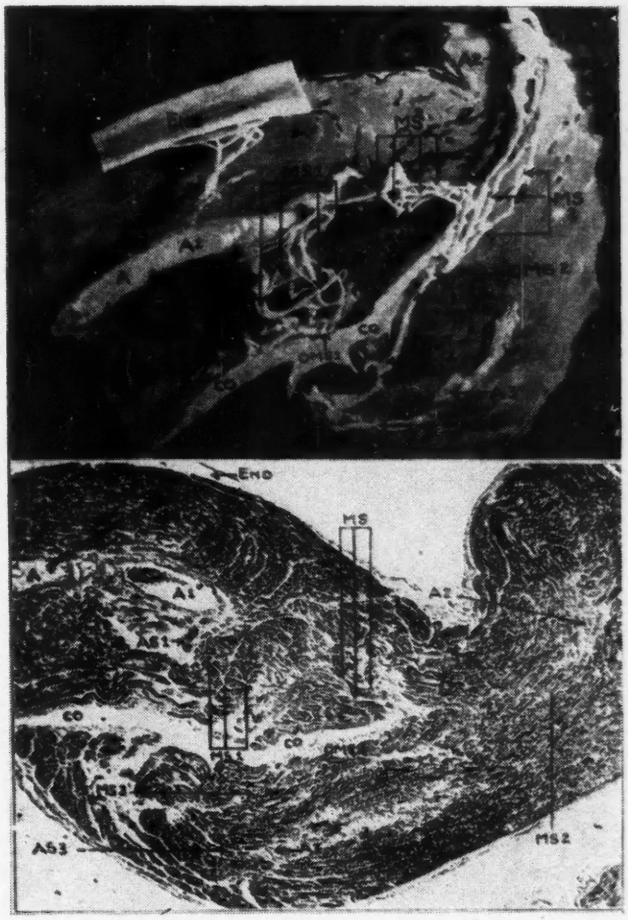


Fig. 14.—Top: Photograph of a wax plate reconstruction of the arterio-sinusoidal vessels and the myocardial sinusoids (Wearn, 8). A1 is an artery; AS1 is a branch of the artery which empties directly into the common opening (CO) which is an inpouching of the endocardium of the left ventricle. End. is endocardium; MS is myocardial sinusoid. CO is common opening; AS is arterio-sinusoidal vessel; A is artery; OMS is opening of a myocardial sinusoid into the lumen of the ventricle. Bottom: A photograph of one of the serial sections from which the wax model was reconstructed.

adventitia. Such a vessel breaks up into channels whose lumina are very irregular, and named by Wearn *myocardial sinusoids* (Fig. 15). The walls of these channels are very thin, made up of endothelium reinforced by a minimum amount of subendothelial connective tissue. The diameters of these channels may vary from 50 to 250 microns. The characteristics of these vessels are identical with those of sinusoids as described by Minot in 1900.[9] Thin walls lie in close contact with the heart muscle, running between bundles of muscle fibres and, at times, between the fibres themselves. The myocardial sinusoids run a meandering course, anastomosing very freely with one another, and not infrequently with the capillaries and, *please note*, open into the lumen of the ventricle either directly or through a common opening. When closed and empty, the myocardial sinusoids may resemble closely, and are easily mistaken for, strands of fibrous tissue. Wearn states that "the similarity of the walls of the myocardial sinusoids to those of capillaries, and the somewhat similar distribution between and in close contact with muscle bundles and muscle fibres, would indicate that the myocardial sinusoids play a definite role in supplying parts of the heart with blood."

Before proceeding further, it should be pointed out that the myocardial sinusoids were described as existing in animal hearts by Wearn in 1933, but their existence has been denied by most workers until, at McGill in 1945, Vineberg reported implanting the left internal mammary artery into the wall of the left ventricle with either the end of the artery or intercostal branches open and bleeding freely into the myocardial tunnel through which the internal mammary artery had been drawn. Much to everyone's surprise, the implanted artery not only remained open but sent out branches which anastomosed with those of the surrounding coronary vessels. Further, it was pointed out by the late Lyman Duff, and confirmed by MacMillan, that in no instance – either in animal or in human hearts examined within three weeks after internal mammary artery implantation—was there ever any evidence of a myocardial hæmatoma.

In searching for an explanation why: (i) an implanted internal mammary artery remained open after implantation into a left ventricular tunnel, and (ii) there was no evidence of a myocardial hæmatoma, we discovered the work of Wearn and

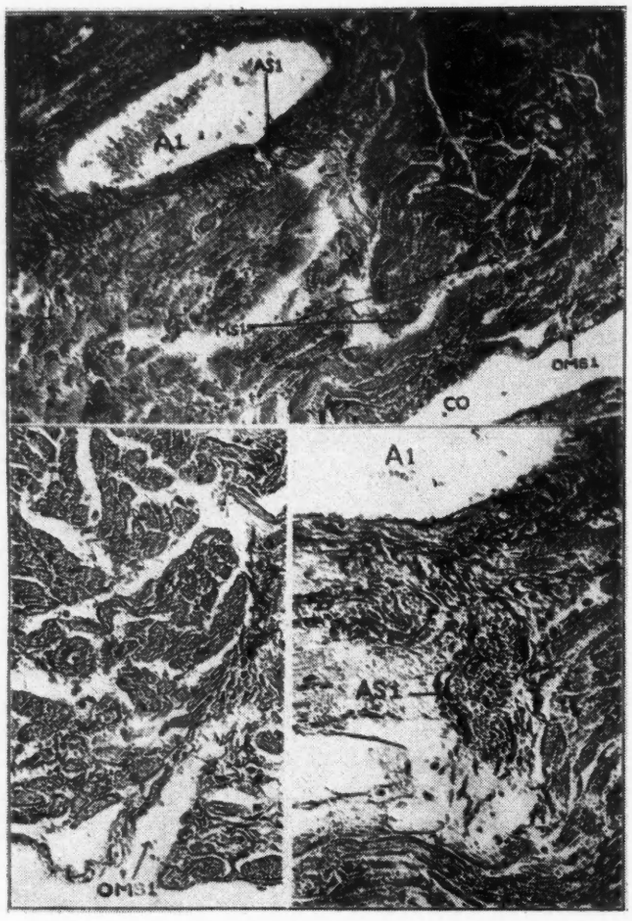


Fig. 15.—Top: Reproduction of photomicrograph published by Wearn (8) in 1933. A1 is an artery which is shown branching into AS1. This branch AS1 divides into myocardial sinusoids, MS, which empty into the common opening, CO, at OMS1. Right lower corner: Shows a section of the arterio-sinusoid vessel, AS1, and the wall of the artery, A1, from which it arises as shown. Left bottom: Shows opening of myocardial sinusoids into common opening.

his associates. Now, after studies on at least 400 internal mammary artery-implantations in animals, and well over 100 human cases, it is clear that the artery remains open and no myocardial hæmatomas are formed for the reason that the myocardial sinusoidal spaces are broken into in great numbers at the time that the intra-myocardial tunnel is prepared to receive the implant.

One of the best sets of photomicrographs illustrating these points is to be seen in the sections made from the heart of a human patient who died 82 hours after internal mammary artery implantation from a fresh coronary artery occlusion. At autopsy, the internal mammary artery was injected with India ink which flowed down the artery into the myocardium through the side hole in the wall of the implanted internal mammary artery, and into a space around it, and from there it was found in surrounding arterioles, capillaries, and even in what has been described as a myocardial sinusoidal space (Figs. 16a, 16b and 16c).

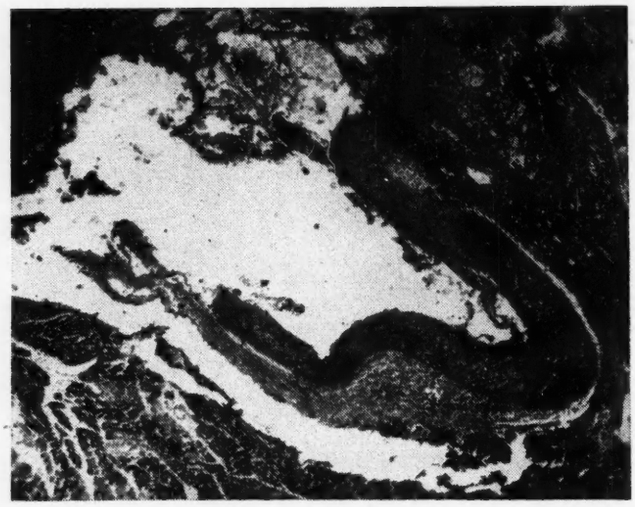


Fig. 16.—Photomicrographs of the heart of a patient who died 82 hours after internal mammary implantation and in whom the internal mammary artery was injected with India ink at autopsy. **Fig. 16a** shows space around opening in internal mammary artery lying in myocardial tunnel which contains India ink, and no evidence of hæmatoma.

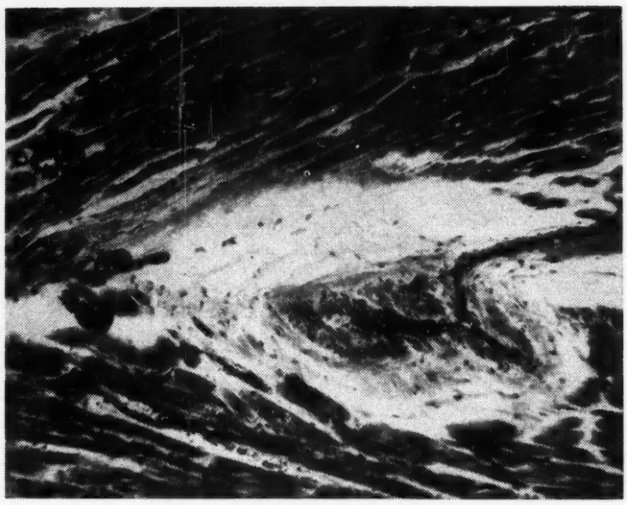


Fig. 16b.—Section showing India ink in arterioles and capillaries.

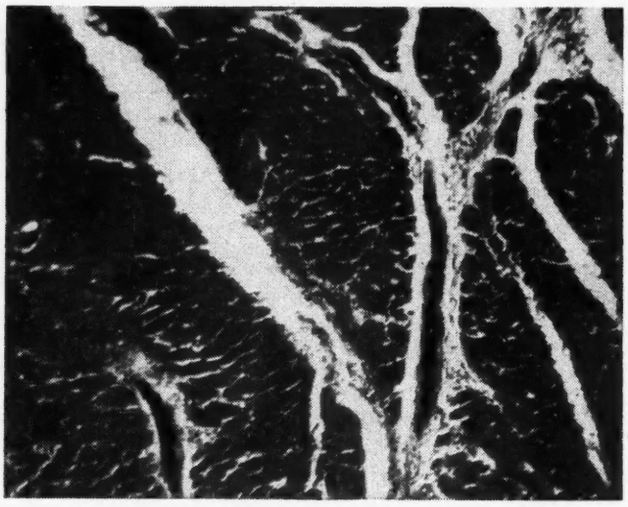


Fig. 16c.—Section showing India ink in myocardio-sinusoidal spaces.

ARTERIO-LUMINAL VESSELS

The second type of vessel communicating between the coronary arteries and the ventricular lumen, and observed by Wearn, runs much more directly from the coronary arteries to the lumen

of the ventricle, and the walls of these vessels are thicker than those of the arterio-sinusoidal vessels and retain their thickness at the point of entrance of the vessels into the heart cavity, averaging 0.2 mm. to 1.0 mm. in diameter. They appear in the atria and ventricles but are more numerous in the latter. They usually arise from the main trunks of the coronary arteries during their course towards the apex of the heart. Many of the deeper branches of these arteries lying near the endocardium also give off frequent branches. As many as 8 to 10 of this type of arterio-luminal communicating branch were frequently seen following the course of the anterior branch of the left coronary artery from the base to the apex, and several openings were visually found near the apex of the ventricle. In one human specimen in which both ventricles were injected, communicating vessels passed from the left anterior coronary artery to both ventricular chambers. Some six to eight vessels were found with great regularity in the upper two-thirds of the antero-lateral surface of the right ventricle. These have not been demonstrated with as great frequency on the posterior surface of the heart but, in one well-injected specimen, there were six arteries seen entering the right ventricle posteriorly. Many of these vessels terminated not only on the surface of the columnæ arcuatæ but on the intercolumnar spaces as well.

Most of the arterio-luminal vessels ran a direct short course from the coronary artery to the heart cavity. However, some of these vessels gave off branches which broke up into capillaries.

Thus Wearn settled the long controversy started by Vieussens in 1706 and proved that there are definite arterio-luminal vessels which have no connection with the venous system or, for that matter, with the vessels described by Thebesius in 1708. Further, he showed that the arterio-luminal, the myocardial-sinusoidal, and the Thebesian vessels each reach the lumen of the ventricle through a separate opening. However, all three of these vessels frequently open into a common opening located at the heart cavity.

The ivalon sponge operation appears to have greatly increased the frequency and size of the arterio-luminal vessels, creating dozens of large-sized arterioles which dip directly into the left ventricular cavity from which, theoretically, blood could be siphoned back into the arteriolar network by the pumping action of the heart muscle (Fig. 17).

It is conceivable that as the heart muscle contracts it squeezes the blood out of the numerous arterio-luminal, arterio-sinusoidal and myocardio-sinusoidal vessels through the capillaries to the veins. During diastole there is a large empty system of vessels in communication with the lumen of the ventricle, so that blood is siphoned from the ventricular cavity into the heart wall.

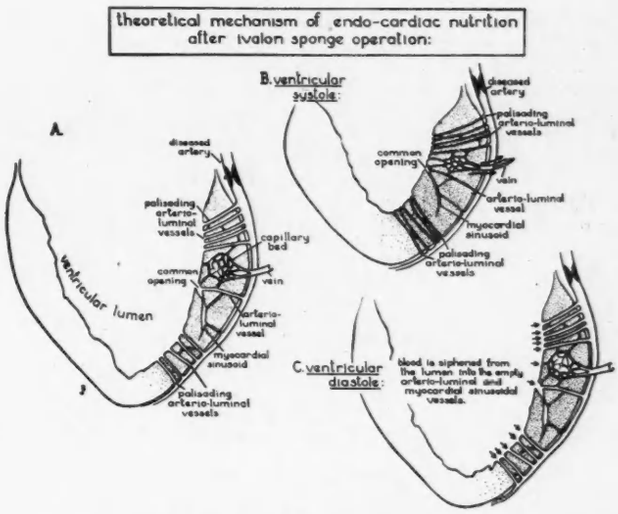


Fig. 17.—Drawing showing the arrangement of arterio-luminal, arterio-sinusoidal and myocardio-sinusoidal vessels, in particular their connection with the ventricular lumen. It is postulated that during left ventricular contraction blood is squeezed out of these vessels through the capillaries, leaving a large network of vessels comparatively empty and in contact with the left ventricular lumen during diastole, permitting siphoning of blood into the heart wall.

A careful examination of x-ray studies and histological sections of sponge-treated animal hearts indicates that, in addition to the development of the vessels of Vieussens, the myocardio-sinusoidal spaces have increased in size and number, suggesting that they too through their openings into the heart cavity may siphon blood back into the heart in the presence of proximally constricted and blocked coronary arteries.

Thus, it would appear from the present experimental evidence that, when the epicardium of the left ventricle is removed and a thin layer of ivalon sponge placed directly upon the bared myocardial muscle, blood vessels from the fibrous pericardium grow through the sponge into the heart muscle. Further, there is evidence to suggest that in some way, somehow, in addition to affording a scaffolding for blood vessel growth from outside into the heart muscle, the ivalon sponge tends to open up long-forgotten arterio-luminal and perhaps myocardio-sinusoidal luminal vessels. In this way a heart treated with ivalon sponge may theoretically receive its nutrition both from outside and from inside the ventricular chamber. The size and frequency of these openings from the ventricular lumen into the heart wall makes one wonder whether these hearts have actually changed into a 400 million year old prehistoric type of heart which lives without coronary arteries and receives its nutrition from the heart chambers.

ADDENDUM

A total of 14 cases of coronary artery insufficiency have undergone an ivalon sponge operation, eight of these with ivalon sponge alone and six in combination with internal mammary artery implantation. Four patients had severe left ventricular failure with enlargement, and all have done well with the sponge operation alone. In the group there were four patients over 60 years of age

who had the sponge operation only. Details of the clinical results are now being compiled. There has been no mortality in this group of poor-risk patients. The ivalon sponge patients were out of bed on the fifth post-operative day, and at home within two to three weeks. The majority of these patients are now free from pain and seem to be improving every day.

Figures 13, 14 and 15 are reproduced by the kind permission of Dr. J. T. Wearn and the *American Heart Journal*.

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RÉSUMÉ

Dans sa recherche pour combattre l'ischémie du myocarde, l'auteur a songé à recréer l'anatomie primitive des poissons des temps préhistoriques. Les artères coronaires n'avaient alors pas encore fait leur apparition et le myocarde était nourri directement du sang circulant dans le ventricule par l'entremise d'un réseau de pertuis. Après avoir expérimenté l'usage de différentes substances spongieuses comme le corail, les éponges marines et les éponges siliceuses sans grand succès, il adopta l'emploi de tranches d'éponge d'Ivalon appliquées à la surface du ventricule gauche. L'ischémie du myocarde fut artificiellement produite par une technique décrite antérieurement dans ces pages (numéro du 15 avril, 1958). Chez les chiens qui survécurent trois mois ou plus, l'examen histologique du cœur montra, dans certains cas, le développement d'une circulation extra-coronarienne suffisamment riche pour corriger l'ischémie du ventricule gauche. Ces constatations furent confirmées par l'injection de substance opaque aux rayons X ainsi que d'encre de Chine dans la cavité ventriculaire, que l'on retrouva ensuite dans la masse même du myocarde après avoir pénétré par les interstices de la substance spongieuse. On présente un rappel de l'anatomie des vaisseaux de Vieussens et de Thébésius ainsi que des travaux de Wearn. Lorsqu'elles sont appliquées à la surface externe du muscle cardiaque, les éponges peuvent également servir de pont vasculaire entre le péricarde et le myocarde.

A COMPARISON OF THE CEPHALIN-CHOLESTEROL FLOCCULATION AND THYMOL TURBIDITY TESTS IN PATIENTS WITH PORTAL CIRRHOSIS*

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THE CEPHALIN-CHOLESTEROL flocculation and thymol turbidity tests reflect derangements in the serum proteins.[1] These non-specific tests may be useful aids in the recognition or assessment of hepatic disease and in differentiating jaundice due to hepatic and post-hepatic causes.

In order to assess the relative value of the cephalin-cholesterol flocculation and thymol turbidity tests by comparing the normal, borderline and abnormal ranges of each test in patients with portal cirrhosis, the results of determinations performed on the same sample of blood in 64 cases have been analyzed.

MATERIAL AND METHODS

Clinical, laboratory and histological data in 64 white men with portal cirrhosis were studied. The diagnosis was established at autopsy in 39 cases and by needle biopsy in six cases. In the remaining 19 patients, the clinical and biochemical configuration left little or no doubt as to the diagnosis of portal cirrhosis.

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These patients ranged in age from 32 to 87 years, averaging 63 years. The only other demonstrable condition which might have influenced the results of these tests was diabetes mellitus in ten patients, who had fasting blood sugar levels above 120 mg. %. Five of these patients received insulin at one time or another during the course of their illness.

TABLE I.—NO. OF C.C.F. AND T.T. TESTS PERFORMED WHEN SERUM BILIRUBIN LEVELS WERE:

Over 1.0 mg. %		*1.0 mg. % or less*	
Tests	*Patients*	*Tests*	*Patients*
1	18	1	19
2	7	2	7
3	7	3	4
4	3	4	3
5	1	5	1
6	4	9	1
7	2	10	1
8	2		
9	1		
14	1		
20	1		

The normal range of the thymol turbidity test[2] is considered to be 0 to 4.6 units. In the healthy subjects studied by Zieve and Hill,[3] a transition zone up to 8 units was found. This has also been the experience at this hospital, where minor elevations above 4.6 units are not uncommonly encountered. Values over 8 units are significant.

The normal value of the cephalin-cholesterol flocculation test (48 hrs.)[4] is considered to be 0 to plus 1. Values of plus 2 may be difficult to evaluate but are considered to be abnormal. Cephalin-cholesterol flocculation values of plus 3 and plus 4 are significant.

TABLE II.—NO. OF C.C.F. AND T.T. TESTS PERFORMED AT VARIOUS SERUM BILIRUBIN LEVELS

Serum bilirubin mg. %	*No. of tests performed*
Less than 1	73
1 - 2	82
2 - 3	34
3 - 4	23
4 - 5	8
5 - 6	7
6 - 7	4
7 - 8	2
8 - 9	2
9 - 10	2
10 - 11	1
12 - 13	1
13 - 14	2
16 - 17	1
20 - 21	1
22 - 23	1
25 - 26	1
28 - 29	1
30 - 31	1
38 - 39	1

Because the flocculation and turbidity tests are used as aids in differentiating hepatic from post-hepatic jaundice, the results were analyzed in two groups, i.e. when the serum bilirubin level[5] was over 1.0 mg. %, and when the serum bilirubin was 1.0 mg. % or less. In 47 patients, 167 tests were performed when the serum bilirubin was over 1.0 mg. %. In 36 patients 81 tests were performed when the serum bilirubin levels were 1.0 mg. % or less.

The number of tests performed per patient is noted in Table I.

The number of flocculation and turbidity tests performed at each level of serum bilirubin are recorded in Table II.

RESULTS

(a) A comparison of the cephalin-cholesterol flocculation and thymol turbidity tests in 47 patients (167 tests) when the serum bilirubin level was above 1.0 mg. % is shown in Fig. 1. In this figure the values of thymol turbidity are plotted against the corresponding levels of cephalin-cholesterol flocculation.

The average value of thymol turbidity was calculated at each level of cephalin-cholesterol flocculation. Table III and Fig. 1 show that there is no evident correlation between the levels of these two tests, except that the highest levels of thymol turbidity occur when the cephalin-cholesterol flocculation test is most abnormal (plus 4).

TABLE III.—COMPARISON OF AVERAGE THYMOL TURBIDITY AT EACH LEVEL OF CEPHALIN-CHOLESTEROL FLOCCULATION: 167 TESTS (47 PATIENTS)

C.C.F.T.	*Average T.T. units*
0	7.4
plus 1	10.8
plus 2	9.3
plus 3	12.6
plus 4	20.3

TABLE IV.—NO. OF VALUES AT EACH LOWER RANGE OF C.C.F. AND T.T. IN PATIENTS WITH SERUM BILIRUBIN LEVELS OVER 1.0 MG. %

Test	*Range*	*No. of values*
C.C.F.	0 to plus 1	31
	0 to plus 2	64
T.T.	0 to 4.6 units	21
	0 to 8 units	58

The number of values at each lower range of the cephalin cholesterol flocculation and thymol turbidity tests are listed in Table IV.

To determine which test is the more sensitive, the number of values of each test in the normal and borderline range have been compared. These are listed in Table V.

TABLE V.—COMPARISON OF C.C.F. AND T.T. TESTS IN THE NORMAL AND BORDERLINE RANGES

C.C.F.	*T.T. units*	*No. of tests C.C.F./T.T.*
0 to plus 1	0 to 4.6	31/21
	0 to 8	31/58
0 to plus 2	0 to 4.6	64/21
	0 to 8	64/58

It would appear therefore that if the upper limit of the cephalin-cholesterol flocculation test is taken as either plus 1 or plus 2, and the upper limit of thymol turbidity as 4.6 units, the thymol turbidity test is more likely to be abnormal. The same is true when the upper limit of cephalin-cholesterol flocculation is taken as plus 2 and the thymol turbidity as 8 units. The cephalin-cholesterol flocculation test more often gives abnormal results when its upper limit is taken as plus 1 and the upper limit of thymol turbidity is taken as 8 units.

(b) A comparison of the cephalin-cholesterol flocculation and the thymol turbidity test in 36 patients (81 tests) when the serum bilirubin level was 1.0 mg. % or less is shown in Fig. 2. In this figure the values of thymol turbidity are plotted against the corresponding levels of cephalin-cholesterol flocculation.

TABLE VI.—COMPARISON OF AVERAGE T.T. AT EACH LEVEL OF CEPHALIN-CHOLESTEROL FLOCCULATION: 81 TESTS (36 PATIENTS)

C.C.F.	*T.T. units*
0	6.0
plus 1	8.0
plus 2	10.6
plus 3	11.4
plus 4	9.1

TABLE VII.—NO. OF VALUES AT EACH LOWER RANGE OF C.C.F. AND T.T. IN PATIENTS WITH SERUM BILIRUBIN LEVELS OF 1.0 MG. % OR LESS

Test	*Range*	*No. of values*
C.C.F.	0 to plus 1	48
	0 to plus 2	66
T.T.	0 to 4.6	19
	0 to 8	51

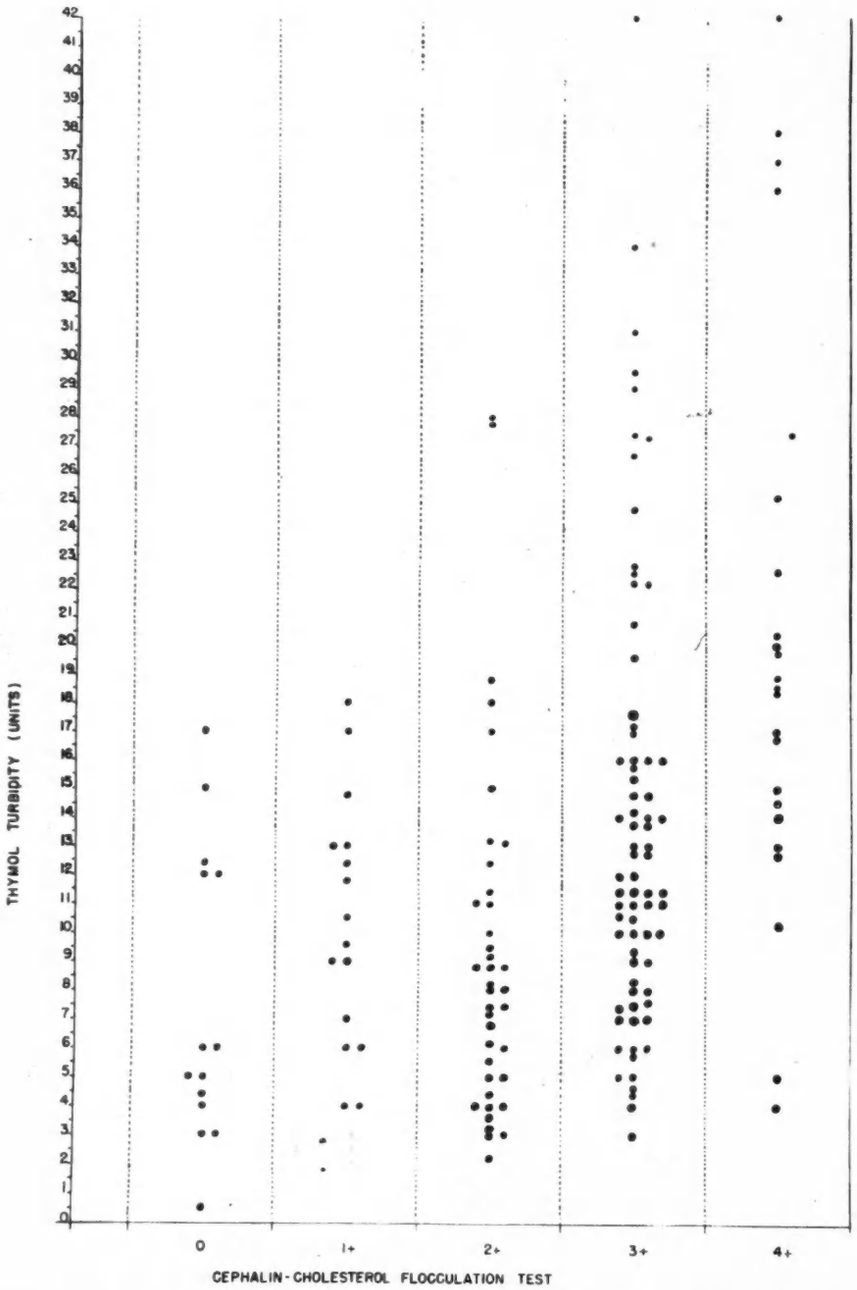


Fig. 1.—A comparison of 167 thymol turbidity and cephalin-cholesterol flocculation tests performed simultaneously in 47 patients with portal cirrhosis when the serum bilirubin was over 1.0 mg. %.

The average value of thymol turbidity was calculated at each level of cephalin-cholesterol flocculation. Table VI shows that there is a linear correlation between the average thymol turbidity level and the level of cephalin-cholesterol flocculation up to and including plus 3 flocculation. No comparison can be drawn when the cephalin-cholesterol flocculation is plus 4, as there is only one reading of thymol turbidity.

TABLE VIII.—COMPARISON OF C.C.F. AND T.T. TESTS IN THE NORMAL AND BORDERLINE RANGES

C.C.F.	*T.T. units*	*No. of tests C.C.F./T.T.*
0 to plus 1	0 to 4.6	48/19
	0 to 8	48/51
0 to plus 2	0 to 4.6	66/19
	0 to 8	66/51

The number of values at each lower range of the cephalin-cholesterol flocculation and thymol turbidity tests is listed in Table VII.

To determine which test is the more sensitive the number of values of each test in the normal and borderline ranges have been compared. These are noted in Table VIII.

It would appear therefore that if the upper limit of the cephalin-cholesterol flocculation test is taken as either plus 1 or plus 2, and the upper limit of thymol turbidity as 4.6 units, the thymol turbidity is more likely to be abnormal. The same is true when the upper limit of cephalin-cholesterol flocculation is taken as plus 2 and the thymol turbidity as 8 units. When an upper limit of thymol turbidity is taken as 8 units and cephalin-cholesterol flocculation as plus 1, both tests are equally liable to give abnormal results.

(c) The possibility of a correlation between levels of serum bilirubin and values of thymol turbidity and cephalin-cholesterol flocculation was considered. No relationship could be demonstrated.

DISCUSSION

The cephalin-cholesterol flocculation and thymol turbidity tests are frequently used in the assessment of patients with cirrhosis of the liver. It is recognized that different factors are involved in each test.[1, 6] Cephalin-cholesterol flocculation results from qualitative changes in serum albumin that reduce its flocculation-inhibiting property, or it may result from a reduction of alpha-globulin which may also inhibit flocculation. A positive thymol turbidity is related to an increase in gamma globulin, beta globulin and lipoproteins, or in serum lipids.

TABLE IX.
(*after Zieve and Hill*)

C.C.F. 48 hours	*No. of cases*	*Thymol turbidity units*	
		Mean	*Range*
0 or +1	14	5.0	2.5 - 8.2
+2	5	2.6	1.5 - 3.7
+3	10	6.3	2.6 - 10.7
+4	11	15.3	2.6 - 30.2

The normal limits for the two tests were evaluated in 714 healthy men by Zieve and Hill.[3] They found the normal thymol turbidity to be 3.1 ± 1.5 units and concluded that 5 to 8 units was "questionably abnormal" and over 8 units "definitely abnormal". They also determined the percentage incidence of cephalin-cholesterol flocculation readings of 0 to +1, and found that 99.6% of normal subjects had a 0 to +1 reading at 48 hours.

Zieve and Hill[7] performed cephalin-cholesterol flocculation and thymol turbidity tests simultaneously in 40 patients with cirrhosis of the liver, nearly all of whom had Lænnec's or fatty cirrhosis. The mean total serum bilirubin level in their patients was 2.0 mg. %. Their findings are tabulated in Table IX.

The thymol turbidity levels were strikingly elevated when the cephalin-cholesterol flocculation test was plus 4. However, in 10 patients the mean thymol turbidity level was only 6.3 units when the cephalin-cholesterol flocculation test was plus 3.

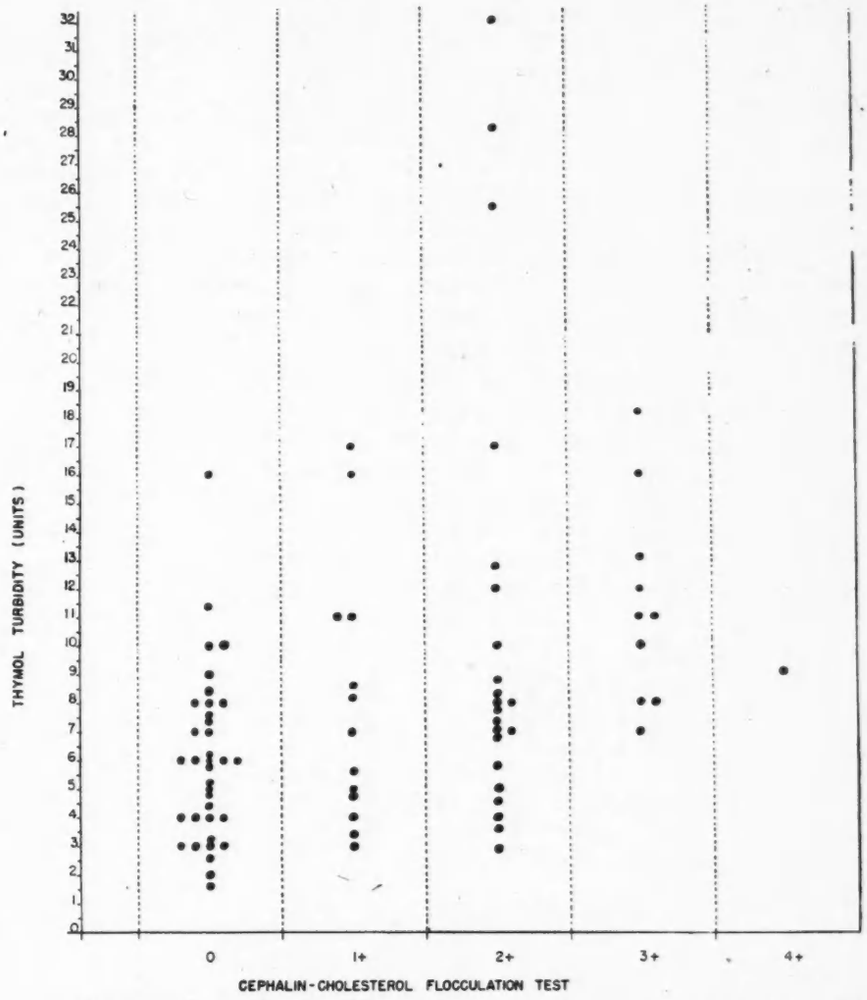


Fig. 2.—A comparison of 81 thymol turbidity and cephalin-cholesterol flocculation tests performed simultaneously in 36 patients with portal cirrhosis when the serum bilirubin was 1.0 mg. % or less.

The percentage incidence of abnormal values of the cephalin-cholesterol flocculation and thymol turbidity tests in the present study is summarized in Table X.

CEPHALIN-CHOLESTEROL FLOCCULATION TEST

Table X shows that of the 167 tests performed in 47 patients with serum bilirubin levels over 1.0 mg. %, cephalin-cholesterol flocculation values of 2 to 4 plus occurred in 81% of tests, and values of 3 to 4 plus in 58% of tests. Two to 4 plus flocculation occurred in 81% of patients, and 3 to 4 plus in 72% on one or more occasions. Thus levels below 2 plus occurred in 19% of tests, and below 3 plus in 42% of tests (19% and 28% of patients respectively on one or more occasions).

TABLE X.—PERCENTAGE INCIDENCE OF ABNORMAL VALUES OF C.C.F. AND T.T. TESTS

Serum bilirubin	*C.C.F.*	*T.T. over 8 units*
Over 1 mg. %	*2 to 4 plus* 81% of tests	
167 tests	(81% of patients)*	67% of tests
(47 patients)	*3 to 4 plus* 58% of tests	(79% of patients)*
	(72% of patients)	
1 mg. % or less	*2 to 4 plus* 38% of tests	
81 tests	(69% of patients)*	36% of tests
(36 patients)	*3 to 4 plus* 16% of tests	(47% of patients)*
	(25% of patients)*	

*Percentage values given for patients in this table refer to the thymol turbidity test being over 8 units and the cephalin-cholesterol flocculation 2 to 4, or 3 to 4 plus, on one or more occasions but not necessarily each time the test was performed.

In 38 patients with serum bilirubin levels of 1.0 mg. % or less, 38% of the 81 cephalin-cholesterol flocculation values were 2 to 4 plus and 16% were 3 to 4 plus. This value was 2 to 4 plus in 69% of patients and 3 to 4 plus in 25% on one or more occasions. Thus levels below 2 plus occurred in 62% of tests and below 3 plus in 84% of tests (31 and 75% of patients respectively on one or more occasions).

As many as 48% of all the patients had cephalin-cholesterol flocculation values below plus 2 on at least one occasion. Our findings are similar to those reported by Zieve and Hill.[7]

THYMOL TURBIDITY TEST

Sixty-seven per cent of the 167 values determined in the 47 patients with serum bilirubin levels over 1.0 mg. % were over 8 units. Values over 8 units

occurred in 79% of the patients on one or more occasions. Thirty-six per cent of the 81 values determined in 36 patients when the serum bilirubin level was 1.0 mg. % or less were over 8 units. Values over 8 units occurred in 47% of the patients at least once.

Fifty per cent of all patients had thymol turbidity readings below 8 units on one or more occasions.

When the serum bilirubin level was over 1 mg. % the cephalin-cholesterol flocculation value was as frequently plus 2 to 4 as the thymol turbidity test was over 8 units. When the serum bilirubin level was 1 mg. % or less, cephalin-cholesterol flocculation was also as frequently plus 2 to 4 as the thymol turbidity test was over 8 units.

Analysis of these cases revealed 12 instances in which one of the values was usually abnormal while the other was not. Since either test may be of value in the individual case, it is considered that one should not be performed in preference to the other.

SUMMARY AND CONCLUSIONS

Cephalin-cholesterol flocculation and thymol turbidity tests were performed on the same sample of blood in 64 patients with portal cirrhosis. In 47 patients, 167 tests were performed when the serum bilirubin was over 1.0 mg. % and in 36 patients, 81 tests were performed when the serum bilirubin was 1.0 mg. % or less.

(a) When the serum bilirubin was over 1.0 mg. %:

The cephalin-cholesterol flocculation test was 2 to 4 plus in 81% of the tests, and 3 or 4 plus in 58% of the tests (81% and 72% of patients respectively, on one or more occasions).

The thymol turbidity test was over 8 units in 67% of the tests (79% of the patients on one or more occasions).

When the upper limits of cephalin-cholesterol flocculation and thymol turbidity were taken as plus 1 and 8 units respectively, the cephalin-cholesterol flocculation test was slightly more often abnormal. On the other hand, when the upper normal limit of the cephalin-cholesterol flocculation test was taken as plus 2 and the upper normal limit of thymol turbidity as 8 units, both values were nearly equally abnormal.

There was no evident correlation between the levels of these two tests, except that the highest levels of thymol turbidity occurred when cephalin-cholesterol flocculation was most abnormal (4 plus).

(b) When the serum bilirubin level was 1.0 mg. % or less:

The cephalin-cholesterol flocculation value was 2 to 4 plus in 38% of the tests, and 3 or 4 plus in 16% of the tests (69% and 25% of the patients respectively, on one or more occasions).

The thymol turbidity test was over 8 units in 36% of the tests (47% of the patients at least once).

When the upper limits of cephalin-cholesterol flocculation and thymol turbidity were taken as plus 1 and 8 units respectively, both tests were almost equally abnormal. However, when the upper normal limit of cephalin-cholesterol flocculation was taken as plus 2 and the upper normal limit of thymol turbidity as 8 units, the latter test was much more often abnormal.

There is a linear correlation between the average thymol turbidity and cephalin-cholesterol flocculation levels up to and including plus 3 flocculation. Insufficient data were available to compare the tests when the cephalin-cholesterol flocculation was plus 4.

(c) Forty-eight and 50% of patients had normal cephalin-cholesterol flocculation and thymol turbidity tests respectively on one or more occasions. It is considered that neither of these non-specific tests is to be preferred. In the assessment of the patient with cirrhosis, it may be advantageous to perform both of them.

(d) No relationship could be demonstrated between the levels of serum bilirubin and values of thymol turbidity or cephalin-cholesterol flocculation.

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RÉSUMÉ

Dans l'évaluation de l'insuffisance hépatique, les auteurs ont cherché à établir une relation entre les résultats de la floculation de la céphaline cholestérol et ceux de la turbidité du thymol. Ils pratiquèrent ces épreuves chez une série de cirrhotiques divisée en deux groupes selon que le taux de la bilirubine s'élevait jusqu'à 1 mg., ou dépassait cette limite. Pour que les deux épreuves montrent une certaine équivalence il fallut fixer la limite de la normale pour la turbidité du thymol à 1 plus (+) dans le premier groupe de malades, et à 2 plus (++) dans le deuxième groupe, tout en conservant à 8 unités la limite supérieure de la normale dans la floculation de la céphaline cholestérol. Si l'on ne s'en était tenu qu'à l'une ou à l'autre des deux valeurs dans la turbidité du thymol il en aurait résulté un déséquilibre d'interprétation.

On observa une certaine corrélation linéaire entre les résultats des deux épreuves chez les malades du premier groupe; par contre on n'en constata aucune chez ceux du second groupe si ce n'est que les taux les plus élevés de turbidité du thymol se virent dans les cas où la floculation de la céphaline cholestérol était la plus anormale.

Un résultat normal dans l'une ou l'autre épreuve fut obtenu au moins une fois chez environ la moitié de ces malades au cours de la durée de cette expérience. Les auteurs ne purent établir de corrélation entre ces résultats et le niveau de la bilirubine du sérum. Ils n'affichent aucune préférence pour l'un ou l'autre de ces tests et recommandent de pratiquer les deux genres de détermination dans les cas de cirrhose.

ROLE OF THE INDUSTRIAL PHYSICIAN

"It is often argued that a firm has not sufficient work to employ a doctor fully or substantially part time. This attitude derives from a focus on accidents and sickness and without regard to prevention. I venture to submit that the most important item is to assure that the doctor has free time—time to think, study, review, and apply his experience gained in the surgery and on the plant. Only thus can he hope to diminish the number of patients and so have adequate time for proper investigation of each case, the basis of which is time to listen attentively and observe carefully. And let us recognize that the emergency treatment of casualties and occupational diseases is relatively unimportant, compared with the detection of minor deviations from health of body and the mental effects of stress not only in individuals but in the group, in which no demarcation can be made between the influence of work and other activities."—A. Meiklejohn, *Brit. J. Indust. Med.*, 16: 1, 1959.

THE USE OF INTRAVENOUS METHYLPHENIDATE (RITALIN)* IN PSYCHIATRIC INTERVIEWING†

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THERE ARE a great number of favourable reports[2, 3, 8] on the use of various disinhibiting agents, abreagents and stimulants in psychiatric interviews. Intravenously administered amobarbital sodium, thiopental sodium, methamphetamine (Desoxyn) and various combinations of these and other drugs are well known as adjuvants in psychotherapy. In spite of all this, the use of these drugs in interviewing has always been essentially limited to hospital settings in view of the frequent occurrence of very disturbing and sometimes dangerous side effects. Tremor, palpitation, tachycardia, hyperactivity, over-talkativeness and insomnia in response to intravenous methamphetamine, prolonged drowsiness or sleep, agitation, fall in blood pressure, shallow respiration, and even respiratory arrest and coma in response to intravenous amobarbital or thiopental are not infrequently encountered.

The fact that psychoanalytically trained, or even oriented, psychiatrists tend to avoid the use of abreactive or stimulant drugs in interview situations is well known. One of the authors of this paper (G.J.S.-F.) strongly shares this point of view. It is nevertheless true that these techniques are often used by nonanalytically trained psychiatrists, and it follows that the patient-physician relationship is channelled into the modalities of this treatment. Since many patients benefit from treatment in the hands of physicians using these techniques, it can only be assumed that, in their hands, this technique produces symptomatic relief in some patients at least. Psychoanalytically trained workers prefer to use a psychotherapeutic technique in which it is left to the patient to spontaneously produce the material, as he is able to, without organic adjuvants.

Even for those psychiatrists who would tend to use stimulant drugs in office practice, the abovementioned side effects and hazards may have prohibited the use of these drugs. To test this hypothesis, we undertook a questionnaire survey of 25 qualified psychiatrists in the Montreal area. The questions were:

1. Do you use, in your office practice, intravenous amobarbital, thiopental, methamphetamine or other similar drugs, in the psychiatric interview?
2. If so, in what types of cases?
3. If drugs are not used, state your reasons.

Our findings were as follows:

1. None of the 25 psychiatrists uses these drugs in office practice.

2. As a reason for this, 12 of the 25 psychiatrists questioned stated that there is "no need", or "no indication for these adjuvants" or that they are "of no use", while the remaining 12 specialists felt that in selected cases they would use them in a hospital setting, but not in office practice in view of the dangers and side effects, especially the possibility of acting-out and agitated behaviour. This group concluded that the benefit of these drugs was not comparable with the risks involved.

Of the 25 psychiatrists, 13 were psychoanalysts or closely associated with psychoanalysis, and 12 were "general psychiatrists" not closely associated with psychoanalysis. The orientation of our sample is fairly well reflected in a breakdown of the responses: 8 (61%) of the 13 analytically oriented psychiatrists saw no indication for the use of drugs, while only 4 (33%) of the 12 nonanalytically oriented ones felt no need for such adjuvants in interview.

The significant findings were that (1) all these well-known disinhibitants, abreagents and stimulants made no impact at all on the office practice of psychiatry, and that (2) 52% of our sample emphasized the need for a safe drug with disinhibiting or stimulating properties but without disturbing side effects, which could be applied in selected cases of interviewing in office practice.

Ritalin (methylphenidate hydrochloride) seems to satisfy these criteria since it has been available in parenteral form. Freed[1] in 1958 reported on its use intravenously as a diagnostic adjuvant in psychiatry and at the same time, Hartert and Browne-Mayers[2] published a report on the diagnostic and therapeutic use of intravenous methylphenidate in alcoholism. Waggoner[10] used it intramuscularly to facilitate psychiatric interviews. He found that 20 mg. of methylphenidate intramuscularly given 15 or 20 minutes before the interview helped the patients to talk with considerably greater ease and they were able to bring out problems of severe emotional conflict, so that on many occasions it has been possible for these to be resolved more quickly than would have otherwise been the case.

Parallel to these studies, in 1957 one of us (A.B.K.) made some accidental observations on depressed patients given 20 mg. methylphenidate intravenously as a mood stimulant.[4] In response to the injection, most of our patients showed facilitation of verbalization, production of hitherto withheld material and push of speech, with various degrees of affective abreaction. Because of these observations, a research project was devised for the systematic investigation of the use of intravenous methylphenidate in psychiatric interviews

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*Ritalin was supplied through the courtesy of Dr. C. W. Murphy, Medical Adviser, Ciba Company Ltd., Montreal, Canada.

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in diagnosis and in treatment, and of the physiological and psychological responses to the drug and its side effects.

MATERIALS, SUBJECTS, METHODS

These procedures were carried out by two of the authors (A.B.K. and E.K.K.), who used 20 to 40 mg. (an average of 31.2 mg.) of methylphenidate hydrochloride (Ritalin) in 1-2 c.c. of distilled water by rapid intravenous administration. The drug was never given in an initial interview. Its use was always preceded by several drug-free interviews in which a detailed history was taken with an attempt at clinical diagnosis, a statement of the main areas of conflict and the operation of the main ego defences, and an estimation of the extent and direction of the relationship and/or transference (positive, negative, strong or virtually absent). In 11 of our cases the patient was well in the middle of a course of psychotherapy of varying intensity when intravenous methylphenidate was first given.

As a preparatory measure, the patient was told that he was to receive "an intravenous injection which would help him to relax". Doubts and anxieties as to the possible side effects and questions as to the nature of the drug—"whether it was a truth-serum", whether it would make the patient fall asleep or be subject to hypnosis, etc.—were answered with reassurances about the harmlessness of the procedure.

DATA

In 40 psychiatric patients 126 tests were performed. There were 18 men and 22 women aged between 21 and 62, with a mean age of 33. Our patients received 1-8 methylphenidate interviews. Fourteen subjects were in-patients or out-patients of the Jewish General Hospital, Montreal; 26 subjects were patients under treatment in the offices of two of the authors (A.B.K. and E.K.K.). The diagnoses are shown in Table I.

All verbal and nonverbal responses, including autonomic and psychomotor ones, were recorded in longhand as completely as possible. With few exceptions the methylphenidate interviews were carried out in the early afternoon or mid-afternoon. Office patients were provided with one 3-grain capsule of Tuinal for the night following the test in case of sleeplessness.

RESULTS

Physiological responses.—Within five minutes of administration of the drug the pulse rate was elevated by 0-32%, with a mean of 18%. Maximum mean elevation was reached 15 minutes after the injection. This represents an 8 to 62% increase, with a mean of 25%. At the end of a 45-minute interview the pulse remained elevated with a mean of 9%.

Blood pressure.—Systolic pressure was elevated 4-18%, with a mean of 10% and median 9% 10 minutes after injection, and this represented the maximum. Diastolic pressure showed 4-14% elevation with a mean of 9%, and also reached its maximum 10 minutes after the injection. Increases in pulse rate and in blood pressure were both roughly proportionate to the dose of methylphenidate administered.

TABLE I.—DIAGNOSES

Psychoneurotic disorders		23
Anxiety reaction	6	
Depressive reaction	5	
Conversion reaction	4	
Phobic reaction	2	
Obsessive-compulsive reaction	2	
Psychoneurotic reaction (other)	4	
Psychotic disorders		7
Manic-depressive reaction, depressive type	2	
Psychotic depressive reaction	2	
Schizophrenic reactions	3	
Paranoid type	2	
Simple type	1	
Personality disorder		7
Schizoid personality	1	
Compulsive personality	1	
Sociopathic personality	1	
Passive-aggressive personality	1	
Alcoholism	2	
Speech disturbance (stuttering)	1	
Psychophysiological autonomic and visceral disorders		3
Psychophysiological gastro-intestinal reaction (mucous colitis; peptic ulcer)	2	
Psychophysiological skin reaction (pemphigus vulgaris)	1	

In view of the technical difficulties involved, the pulse was recorded in 92 tests and blood pressure in 35 tests only. Continuous recordings could not be carried out, but before injection a baseline of pulse and blood pressure was established and after the injection the pulse rate was recorded every five minutes and blood pressure every 10 minutes.

Respiration.—Increase in respiratory rate was observed but not measured accurately.

Psychological effects.—Within three minutes of the injection, in 91% of our tests, the patients started to show a gradual increase in speech, lasting for the entire period of the 45-minute interview and sometimes continuing for a period of 2 to 3 hours after the interview. The output of speech was tremendously increased, even with the least communicative patients. Silence, or active participation at a verbal level on the therapist's part, was reduced to a minimum. Patients spontaneously reported that their association of ideas became much easier, and that for the first time they were able to overcome "mental blocks", "barriers", "inhibitions", etc. They became aware of previously covered up, forgotten or disregarded material. Not only previously withheld, but preconscious and, not infrequently, unconscious material was brought to consciousness. They also often became aware of the operation of various ego defences, especially rationalization and denial.

It must be remembered that these generalizations are made within the framework of the psychotherapeutic interview technique used, that is to say, the use of the drug within the psychotherapeutic interview. The authors do not mean to imply that such material cannot appear in psychoanalytic

or psychoanalytically oriented interviews—quite the contrary. But within the framework of the technique described in this paper, the following appeared:

1. The drug facilitated the bringing forth of childhood and other traumatic memories withheld or omitted in drug-free interviews. The recall of these memories could be later utilized in therapy since subsequent amnesia does not develop.

2. Patients tended to talk freely about sexual experiences, not withholding material pertaining to past and present sexual practices, including masturbation, premarital or extramarital relationships, incestuous and homosexual drives, or doubts and preoccupations as to their sexual identity.

3. Patients tended to express evidence of tender or hostile feelings towards the therapist or hostilities and jealousies towards family members, parents, siblings, spouses, children, or friends.

4. Schizophrenic patients expressed delusional and bizarre ideas partially withheld in drug-free interviews. In a particularly suspicious and evasive patient, the drug interview helped to establish the diagnosis of paranoid schizophrenia.

Psychomotor activity showed a definite increase, especially in expressive movements, but no really intense agitation developed in any of our subjects. Patients with inhibited emotional expression experienced and verbalized freely their anxious, euphoric or depressed moods. True emotional abreaction occurred only in about a third of the tests, with vivid re-living of past experiences and occasionally with intense crying. Marked differences in responses to the drug could be observed in various patients, depending on their personality structures, diagnostic categories and the prevailing mood before interview. Depressed patients tended to become cheerful and in some instances euphoric. This was especially marked in psychotic depressions, while some of the depressed neurotics showed a shift from depression to mild anxiety and somatic expressions of anxiety. Schizophrenic patients also tended to become euphoric, while hysterical, phobic and obsessive-compulsive patients tended to show anxiety or a gloomy mood or a combination of both. Patients with character disorders and some patients with sociopathic symptoms and a previously "tough front" often broke out crying and tended to internalize conflicts previously handled with acting-out behaviour. Alcoholics with glib rationalizations and previous denial were able to give a more reliable account of their drinking habits. The therapeutic effect of this could be utilized for short periods only, because rationalizations and denial returned again. Some of the depressed, and especially our psychosomatic patients, were able to externalize hostility, usually with a reactive increase in guilt. This often could be utilized in further psychotherapy.

Our case material included only one case with some similarity to a traumatic neurosis. We observed a more intense abreaction in this patient than in the more chronic cases. Erotization of behaviour was noticeable in several cases; in four instances this was marked (in three female patients and a male patient with marked latent homosexual tendencies). Hostile tendencies were much more frequent—as also observed by Freed—but did not assume great intensity, except when methylphenidate was used in combination with intravenous barbiturates.

The dose required to produce the same response in the same patients varied from time to time. The occasional more intense abreaction in some patients tended to be followed by relatively calmer interviews, but there was no tendency to require higher and higher doses to produce similar effects in each subsequent interview.

The time of maximum elevation of blood pressure and pulse rate in most interviews roughly coincided with a peak in the psychological response, especially the effective abreaction, while the increase in verbal productiveness was much less correlated with physiological responses.

The drug did not bring about immediate symptom removal in stuttering (as did methamphetamine) or in colitis, torticollis or hysterical, phobic or obsessive-compulsive symptoms, but the drug interviews were invariably beneficial to the course of treatment in all these conditions. They were instrumental in helping to remove blocks, in mobilizing hidden affects and rigid defences by initiating a phase of improved communication between patient and therapist, and by intensifying the transference.

Side effects.—No consistent side effects were observed by the therapist or reported by the patients. Some of the ones frequently encountered in the majority of our patients were, in order of frequency:

1. Over-talkativeness for 2-3 hours after interview was reported in 28% of the tests. Many of these patients also demonstrated an outpouring of emotions towards family members at home.

2. Sleeplessness on the night following the test made a sleeping pill necessary after 9% of the tests.

3. Palpitation, dryness of mouth, dizziness, headache, weakness, flushing of the face, shortness of breath, and paræsthesia each occurred in less than 10% of the cases, particularly in the first part of the interview, and usually disappeared before the termination of the test. More than half of the patients reported no unpleasant side effects. In none of the interviews were the side effects disturbing to a degree that they would interfere with the safe repetition of the procedure. None of the patients would be unwilling to repeat the test on any other ground. No real hazard was found in using the applied quantity (20-40 mg.) of the drug. All office patients arrived unaccompanied for the interview, and after interview were able to leave the office by themselves.

No addiction or habituation developed to the drug, even after several interviews, though Rioux[7] describes a case of addiction to oral methylphenidate. There were no unpleasant after-effects like depressive or anxious rebound. No psychosis was precipitated by the drug in nonpsychotic subjects, but care was taken to eliminate from our series prepsychotic or borderline cases and patients with severe latent homosexuality or paranoid trends, as well as subjects with extremely brittle egos.

DISCUSSION

The description of the chemical properties and biochemical mode of action of methylphenidate does not belong to this study. It should be stated, however, that the drug is a powerful central psychomotor stimulant with moderate sympathicomimetic action.

The dosage used by us (average 31.2 mg.) was considerably higher than that used by Freed and closer to the one used by Hartert and Browne-Mayers. We found that this was the amount necessary for the desired psychological effects. Higher doses tended to produce more intense physiological effects (increase in pulse rate and blood pressure) and more intense abreaction, and thus were undesirable. In the selection of our patients we had two main indications in mind: a selection of (1) noncommunicative patients from (2) a wide variety of diagnostic categories with elimination of borderline and other cases mentioned above. No external controls were used, as the patients acted as their own controls through previous drug-free interviews. No comparative study was attempted between methylphenidate and placebo or methylphenidate and other stimulants in view of several insurmountable difficulties and limitations in availability of office patients for such a procedure. However, the physiological concomitants ("the pharmacological profile") were partly proofs of and partly guides to the pharmacological activity and potency of the drug. The problem of physiological responses to methylphenidate is rather complex. Maxwell *et al.*[6] in animal experiments found that apart from its central nervous stimulant properties, it also has specific antihypertensive properties, probably centrally mediated. On the other hand, Hartert and Browne-Mayers found a marked rise in blood pressure in their series of alcoholics in response to an average of 32.8 mg. methylphenidate. Our study showed a less pronounced but still evident rise in blood pressure in response to an average of 31.2 mg. of the drug. However, it should be emphasized that this elevation of blood pressure is far below that seen in response to intravenous Pervitin as found by Levine, Rinkel and Greenblatt,[5] which showed an average increase of 40 mg. systolic. The mildness of side effects is, however, the most outstanding finding as compared with the amphetamines and other such disinhibiting agents.

Quantitative aspects of the push of speech were similar to those found in response to methamphetamine, but in addition to facilitating the verbalization of withheld material already in consciousness (as methamphetine) and to some extent preconscious or even unconscious material (as amobarbital), methylphenidate often promotes better communication between conscious and preconscious parts of the mind.

As abreaction occurs only to a moderate degree and not in an "explosive" form, but rather more smoothly, most patients could utilize and integrate liberated affect more constructively.

Administration of the drug does not replace therapeutic skill on the part of the psychiatrist, but may be useful where an adjuvant is needed. Before the procedure is applied, the therapist must have a thorough knowledge of the patient's history, main conflicts, defences, ego strength and the state of transference. It is important to assess the possible meaning of the procedure to the patient.

This puts the drug interview in its proper perspective, where the therapist appears as a benevolent helper, instead of a judge or a police investigator. None of the patients interpreted the drug interview as an unwelcome prying and prodding or brainwashing, but this was probably to a certain extent due to the careful selection and the supportive type of preparation of the patients, especially in the framework of a course of psychotherapy.

We tried the use of intravenous methylphenidate in combination with various other abreagents, and a brief mention of these experiments should be added here.

1. In four instances we attempted to measure the so-called "arousal threshold", a counterpart of the so-called "sleep" threshold described by Shagass and Kerenyi.[9] Our method was to measure the "sleep" threshold first, the amount of amobarbital mg./kg. given intravenously at the rate of 0.5 mg./kg. every 40 sec. until the patient no longer repeats sibilant phrases or gives no indication of attempting to do so. As soon as the patient reached this state of light "sleep", we gave intravenous methylphenidate at the rate of 2 mg. every 40 sec. until the patient again repeated the standard phrases or gave indication of attempting to do so. The amount of intravenous methylphenidate to produce this result was arbitrarily called the "arousal threshold". We were soon forced to abandon this procedure in view of the production of unusually violent and prolonged abreaction and psychomotor agitation, lasting for many hours and even overnight. Nor did amobarbital and methylphenidate, at least in this combination, cancel each other's effect, in our series. They rather seemed to enhance each other. On the other hand, five tests were performed in the reverse order, when 20-40 mg. of intravenous methylphenidate was given first and 250-500 mg. amobarbital or 150-250 mg. thiopental was given in slow intravenous injection

towards the end of the interview. This appeared to be a harmless combination in a hospital setting, but the therapeutic usefulness of the interview was limited, because the addition of barbiturates tended to introduce some degree of amnesia with regard to the entire interview.

SUMMARY

A new intravenous stimulant, methylphenidate hydrochloride (Ritalin), was administered to 40 psychiatric patients (14 hospital and 26 office patients) on 126 occasions as an adjuvant in psychiatric interview. Dosage was 20 to 40 mg., with an average of 31.2 mg. Physiological, psychological and side effects were recorded.

Physiological.—Pulse rate showed maximum mean elevation of 25.0% in 15 minutes after injection. Blood pressure showed a systolic mean maximum 10.4% elevation, reaching this maximum 10 minutes after injection, and the diastolic showed a mean maximum 9% rise 10 minutes after injection.

Psychological.—Within 3-4 minutes after injection gradual push of speech was observed lasting for the entire interview, and sometimes continuing for 2-3 hours. Mental blocks and barriers were removed. Previously withheld, and occasionally preconscious and unconscious material, was brought forth, including childhood memories of possible traumatic importance, hidden sexual experiences and drives, as well as aggressive or tender emotions towards family, friends and therapist. Stuttering was not relieved. Psychotic patients hitherto dissimulating produced rich psychotic material. Emotional expression of anxiety, euphoria or depression became facilitated, but true abreaction occurred only in one-third of cases. The interviews in these cases were beneficial to the course of psychotherapy in the hands of the authors who used it (A.B.K., E.K.K.).

The definite usefulness of methylphenidate as a safe stimulant in interview in office practice was demonstrated.

It is nevertheless quite clear that many psychiatrists will not use such techniques in office practice because of the skew it gives to the therapeutic situation. In the opinion of one of the authors (G.J.S.-F.) this contraindication remains a serious one for all who use psychoanalytic procedures in their psychotherapy.

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RÉSUMÉ

Le chlorhydrate de méthyl-phénidate (Ritalin, *marque deposée*) servit 126 fois d'adjuvant en psychotherapie de 40 malades dont 14 étaient hospitalisés. La posologie s'étendit de 20 à 40 mg. avec une moyenne de 31.2 mg. Au point de vue physiologique le pouls subit une accélération moyenne de 25% dans les 15 minutes qui suivirent l'injection. La tension systolique maximum augmenta en moyenne de 10.4%, et la diastolique de 9%, 10 minutes après l'injection. Au point de vue psychologique le flot de paroles s'accrut durant l'entrevue, continuant même pendant deux ou trois heures. Les obstacles mentaux furent surmontés et les barrières psychologiques franchies. La matière tirée du préconscient et de l'inconscient, retenue précédemment, émergea en surface, y compris les souvenirs d'enfance, d'importance traumatique possible, les expériences et les poussées sexuelles cachées ainsi que la sympathie ou l'agression à l'égard de la famille, des amis et du thérapeute. Le bégaiement ne fut pas amélioré. Les psychosés déclenchèrent la description d'une foule d'incidents psychotiques dissimulés jusque là. Le médicament favorisa l'expression de l'angoisse, de l'euphorie ou de la dépression mais une véritable abréaction ne se produisit que dans un tiers des cas, chez qui l'évolution de la thérapie fut alors favorablement modifiée. Le médicament peut-être employé sans danger au cabinet de consultation. Plusieurs psychiatres refuseront de s'en servir à cause du caractère artificiel qu'il imprime à la situation thérapeutique. Cette contre-indication formerait un obstacle sérieux à son emploi en psychanalyse.

DISCS AND TAPES IN MEDICAL EDUCATION

"The use of discs and tape recordings is growing in popularity in certain areas. These records are prepared by medical societies and schools to keep physicians in out of the way places informed on new processes and treatments.

"This plan has met with mixed reactions. Some medical men are enthusiastic; others, critical. The recordings are welcomed most by those who learn best when listening to the spoken word in the privacy of their homes or office, away from smoke-filled, crowded convention halls. The practical aspect must be considered because discs and tape recordings require considerable preparation, are expensive, and need full-time help to maintain. There ought to be a definite demand for this means of communication before large-scale production begins."—Editorial, *Illinois M. J.*, 114: 246, 1958.

NATIONAL CHARACTERISTICS AND MEDICAL PRACTICE

"As I see it, any doctor has two main objectives: the acquisition of medical knowledge, the search after truth; and the relief and prevention of suffering in patients who come under his care.

"In the United States there is greater emphasis on the former, and in England on the latter. This is largely determined by national characteristics. Americans are a nation in a hurry, and their immense drive, which I find admirable, finds more ready expression in this way. In their more ambling way the British find satisfaction at the slower and more personal tempo, though it may well be that American efforts in the long run provide greater relief for the human race."—J. F. Stokes: A British View of an American Hospital, *New England J. Med.*, 260: 69, 1959.

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PRELIMINARY CLINICAL STUDY OF DIPIPANONE HYDROCHLORIDE (PIPADONE) IN ANÆSTHESIA

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IN 1929, several researchers were working together in the hope of synthesizing a potent and non-toxic analgesic, which would not affect vital functions. They felt that synthesis ought to try to produce something which nature had not already managed to make. Several synthetic narcotics were then given to the medical profession. In 1939, Schaumann and Esleb introduced Demerol (meperidine). Methadone appeared at the end of the Second World War, and a little later Levo-Dromoran (levorphanol) and Nisentil (alphaprodine) were added to the therapeutic arsenal.

It was in 1956 that Pipadone (dipipanone hydrochloride) was discovered. It is racemic 4,4-diphenyl-6-piperidine-3-heptanone hydrochloride, of which the empirical formula is $C_{24}H_{31}ON.HCl.H_2O$. We have had some experience with this new analgesic agent. We do not claim to have examined the properties of dipipanone exhaustively but we have observed its effects in various fields of action of intravenous anæsthesia. Our work has consisted in the study of actions on the nervous system, the respiratory system and the cardiovascular system. We are also reporting our observations in the course of different surgical interventions.

I. RESPIRATORY DEPRESSION

Since our first trial, we have been struck by the ability of dipipanone to depress respiration. Although its phases of depression are similar to those of morphine (Krueger[1]), it resembles more closely those of methadone. Injected by the intravenous route, it slows down the respiratory rate at the same time as it increases the tidal volume, the total effect being to diminish very slightly the minute volume. The method we used to confirm this was intravenous injection of 25 mg. of dipipanone over a period of 60 seconds. We selected 25 patients in good health, from 20 to 30 years of age, and slated for operation, and gave them as preoperative medication this drug plus 0.5 mg. of atropine (1/150 grain). Our results are shown in Table I.

Knowing the work of Masson,[2] we wished to measure the degree of respiratory depression under general anæsthesia. In 25 cases, anæsthesia was induced with sodium thiopental (Pentothal), the average dose being 525 mg. We then injected 10 mg. of dipipanone over two minutes (Table II). The apnœa obtained lasted for an average of 15 minutes. Controlled respiration was practised (we tried to imitate normal respiration as closely as possible) without hyperventilation, for this has the property of prolonging the apnœa due to narcotics.[1, 4-7]

TABLE I.—RESPIRATORY DEPRESSION INDUCED BY DIPIPANONE ANÆSTHESIA

	5 min.	*9 min.*	*11 min.*	*13 min.*	*15 min.*	*20 min.*
Respiratory rate/min.	18	13	10	12	12	14
Minute volume	4860	3380	3100	4080	4320	5320
Tidal air	280	260	310	340	360	380
Percentage change in tidal air		−7.2	+10.7	+21.4	+28.5	+33.6
Percentage change in minute volume		−30.5	−36.3	−16.1	−11.2	+9.4

On the other hand, the same doses injected slowly produced respiratory depression, but with persistence of spontaneous respiration as is shown in Table III, which is the result of study of 50 patients.

From all evidence, the depressing effect of rapidly injected dipipanone in anæsthesia is greater than that obtained with other opiates currently in use. But if we compare our results with those which Swerdlow (Table V) obtained in almost identical conditions (except for speed of injection), we may conclude that its depressant action is not much greater than that of meperidine (Demerol).

TABLE II.—DURATION OF APNŒA RESULTING FROM RAPID INJECTION OF DIPIPANONE DURING THIOPENTAL ANÆSTHESIA

	2 min.	*5 min.*	*8 min.*	*10 min.*	*15 min.*	*20 min.*
Respiratory rate/min.	0	0	0	0	4	6
Minute volume	0	0	0	0	1680	2400
Tidal air	0	0	0	0	420	400

II. HYPOTENSION

In the course of our respiratory studies, we noticed a slowing in cardiac rate which was preceded by a brief tachycardia in several cases. We also noted an increase in peripheral venous volume and a plethoric appearance of the face and neck as well as an increase in the heat of the skin, which suggested a direct action of the drug on the capillaries.[6] Four patients out of 25 also experienced a fall in blood pressure of from 25 to 40 mm. Hg in the horizontal position. In five patients we

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TABLE III.—ACTION OF SLOWLY INJECTED DIPIPANONE ON RESPIRATION DURING THIOPENTAL ANÆSTHESIA

	15 min.	*30 min.*	*45 min.*	*60 min.*	*75 min.*	*90 min.*
Average dose in mg. thiopental (Pentothal)	150	125	125	100	100	50
Dipipanone	5	4	3	3	3	2
Respiratory rate	18	16	14	15	15	16
Minute volume	5330	4800	4580	4500	4200	4320
Tidal air	290	300	320	300	280	270

had the same experience after tilting the table 20 degrees. In four of these cases, results were not severe, but in the fifth the drop in blood pressure obliged us to return him to the horizontal position, whereupon the pressure soon returned to normal. During anæsthesia, we took the precaution of giving our drug slowly; no change in blood pressure was noted, even in Fowler's position.

However, if at the beginning of the intervention we gave a large dose of 10 mg. and then placed the patient in Fowler's position as for rhinoplasty, the systolic blood pressure in each case was lowered by 20 to 5 mm. The horizontal position or the use of from 2 to 5 mg. of methoxamine (Vasoxyl) returned the blood pressure to normal. We purposely caused this hypotension in 47 patients in an attempt to lessen bleeding; this complication occurred in only 14 (3%) of our 325 patients under anæsthesia and was easily corrected. The phenomenon has never been observed in a conscious patient. Doses of 10 to 15 mg. were given during three commissurotomies without any change in the electrical complex of the E.C.G.

III. ANALGESIA[1, 9-12]

We prescribed dipipanone as a postoperative analgesic in 155 patients in the age range of 16 to 60 years. The types of operations were as follows: orthopædic, 38; gynæcological, 24; plastic, 28; pulmonary, 4; renal, 6; repair of injury, 4; neurosurgical, 5; gastrectomy, 5; mastectomy, 4; abdominoperineal, 3; thyroidectomy, 8; and cholecystectomy, 26 — a total of 155.

TABLE IV.—MAINTENANCE DOSE OF DIPIPANONE ADMINISTERED SLOWLY IN N_2O-O_2 ANÆSTHESIA

Time (minutes)	*15*	*30*	*45*	*60*	*75*	*90*	*105*	*120*	*135*	*150*
Dose mg.	8	3	2	2	1	1	1	1	1	1
Respiratory rate	12	15	14	14	14	14	14	14	14	14
Tidal air	320	300	300	300	300	300	300	300	300	300
Minute volume	3840	4500	4200	4200	4200	4200	4200	4200	4200	4200

The clinical evaluation of analgesia[13] is not easy. However, we noted that the drug renders the patient indifferent to his pain. We have not used the Hardy-Wolf-Goodell technique,[6] but have evaluated the analgesic effect of the drug by the degree of indifference of the patient.

The drug was given in every case by the intramuscular route, and we have used it even in patients who had shown an idiosyncrasy to morphine. Furthermore, in 14 patients of almost identical weight and with very similar pain, we gave dipipanone and meperidine (Demerol) in order to compare their effects (Table VI). Injections were given at four-hour intervals.

TABLE V.—EFFECT ON RESPIRATION OF 100 MG. OF MEPERIDINE INJECTED IN 15 SECONDS ACCORDING TO SWERDLOW

Time	*5 min.*	*9 min.*	*11 min.*	*13 min.*	*15 min.*
Respiratory rate	19.1	10.6	9.9	10.1	9.2
Minute volume	5361	3269	3318	3648	3429
Tidal air	282	302	331	363	377
Change % tidal air		+7.2	+17.3	+28.8	+33.1

TABLE VI.—COMPARISON OF ANALGESIC EFFECTS OF MEPERIDINE AND DIPIPANONE

Dose	*Cases*		*Complete analgesia*		*Partial analgesia*		*Insufficient analgesia*	*Nil*
Dose in mg.	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Meperidine								
125	2	12	1	50	1	50	0	0
100	8	50	5	63	3	37	0	0
73	6	38	3	50	3	50	0	0
Dipipanone								
25	2	12	2	100	0	0	0	0
20	8	50	6	75	2	25	0	0
15	6	38	2	33.3	4	66	0	0

TABLE VII.—CUMULATION OF ANALGESIC ACTION OF DIPIPANONE

First injection: *Dose in mg.*	*Cases*		*Complete analgesia*		*Partial analgesia*		*Insufficient analgesia*		*No analgesia*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
25	59	40	44	75	8	14	7	11	0	0
20	53	36	41	79	10	19	2	4	0	0
15	36	24	8	23	12	33	11	31	5	13
Second injection: (four hours after first)										
25	59	40	56	95	3	5	0	0	0	0
20	53	36	47	89	6	11	0	0	0	0
15	36	24	16	44	14	39	6	17	0	0

We established that 25 mg. of dipipanone has a greater analgesic effect than 100 mg. of meperidine (Demerol). However, by the third injection of dipipanone (eight hours after the first) the results became very difficult to assess. It seemed that analgesia lasted for at least four hours. For this reason we have asked ourselves whether dipipanone does not have a cumulative analgesic action. In order to study this characteristic, we chose 148 patients and observed them during the interval between the two injections, with the results shown in Table VII.

These results indicate that the analgesic action of dipipanone is progressive, since 112 patients who obtained satisfactory relief after the first dose had complete relief after the second injection. Was the sedation derived from the first injection insufficient to ensure complete analgesia? We would have liked to use dipipanone with a sedative of similar formula, namely methylprylon (Noludar). Was the effect produced caused by cumulation or fixation of the drug in the organism, or were we seeing a potentialization? We cannot say, but the fact remains that the same phenomenon is shown in the duration of action of the drug.

We have come to the conclusion that repeating a smaller dose at intervals farther and farther apart obtains complete relief of pain for the patient. The optimal dose seems to be 20 mg. With these doses, the first injection is insufficient but with the second complete analgesia is obtained in the majority of patients.

IV. SEDATION

Dipipanone lacks the beneficial action of sleep such as is induced by morphine. In this, its effect is similar to that of methadone.[1] The patient feels a heaviness in the limbs, but does not sleep. Confirmation of this state of wakefulness was obtained from two E.E.G. tracings. The first was made in a patient who was not operated on. He received 20 mg. as premedication plus 0.5 mg. of atropine (1/150 grain). Twenty-five minutes later we started an infusion containing 5 mg. of dipipanone per 100 c.c. at a rate of 60 drops per minute; after 100 c.c. of solution we obtained a new tracing. The tracing never showed a characteristic sleep pattern (Fig. 1).

Since the narcotics and the barbiturates are much more active when used with spinal anæs-

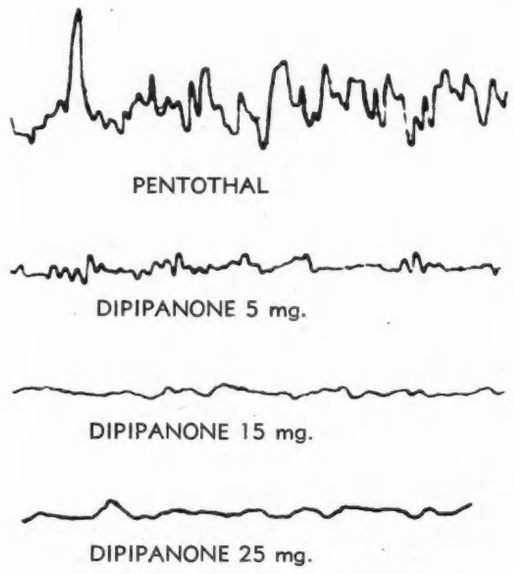


Fig. 1.—Electroencephalogram tracings.

TABLE VIII.—DURATION OF EFFECT

First injection: *Dose in mg.*	*Case*		*Approximate duration in hours*					
			4 to 6 hours		*2 to 4 hours*		*0 to 2 hours*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
25	32	54	28	88	4	12	0	0
20	20	34	10	50	6	30	4	20
15	8	12	0	5	5	63	3	37
Second injection:								
25	32	54	31	97	1	3	0	0
20	20	34	18	90	2	10	0	0
15	8	12	1	12	6	75	1	13

thesia, a tracing was obtained from a patient undergoing cholecystectomy under this type of anæsthesia. No sleep pattern could be seen on this E.E.G. either.

We now envisage using this drug for certain neurological operations under local anæsthesia where the use of the E.E.G. is essential to the neurosurgeon. The results described above suggest that there will be no interference with the E.E.G. tracing due to the action of dipipanone.

V. Mental State on Awakening

We studied the mental state after analgesia with nitrous oxide and dipipanone. The latter was given in doses of from 10 to 25 mg. With heavy doses (25 to 35 mg.) three patients were in a state of torpor, but they were exceptions. Usually they were in a tranquillized state, as Quigley calls it, or in a state of indifference. Postoperatively, we never saw states of excitement or delirium. The patient is always very calm, experiencing a state of total well-being. He may even forget to breathe, but he remains very co-operative and he responds more to the voice than to painful stimuli. Amnesia is absent. He awakens very quickly; he is able to ask the time on the operating table.

VI. Cough Reflex

The complete disappearance of the cough reflex, so useful in certain operations, has been noticed in most patients receiving 10 to 15 mg. intravenously in the first hour. When the infusion of dipipanone is stopped, the reflex returns in the next 30 minutes. High and rapid concentrations of ether or various forms of irritation in the region of the larynx, when the patients are in a state of apnœa following hyperventilation, have never succeeded in stimulating the cough reflex or a laryngospasm. These observations were made on 90 different cases. On account of the characteristics described above, dipipanone is indicated in various surgical operations.

VII. Pneumography and Arteriography

Among the several anæsthetic techniques for pneumo-arteriograms, intubation is of restricted use because it produces a rise in pressure of the cerebrospinal fluid. Thiopental is often used alone, and sometimes it is necessary to give dangerously large doses.

The potentiators such as chlorpromazine (Largactil), promethazine (Phenergan) and mepazine (Pacatal) have their vogue. With these, the dose of barbiturates is considerably diminished, and often the patient is restless and his cough reflex is not sufficiently depressed. Sometimes the slow awakening annoys the neurosurgeon. Based on the additive effect of barbiturates and narcotics (Rovenstine, 1943), meperidine can be used, but with uneven results.

TABLE IX.—How Dipipanone was Used

Dipipanone—thiopental—O_2 without intubation	
Pneumograms	112
Arteriograms	36
Tonsillectomies	6
Curettages	4
Dressing changes	4
Craniotomies	3
Operations on pilonidal cysts	2
Total	167
Dipipanone N_2O—O_2—intubation and sometimes with curare	
Rhinoplasties	60
Cholecystectomies and cholangiographies	6
Cholecystectomies	13
Gastrectomies	5
Operations on injuries	4
Craniotomies	6
Disc removals	12
Operations on eyes	21
Thoracic surgery	5
Cutaneous grafts	5
Appendicectomies	4
Abdomino-perineal resections	3
Thyroidectomies (toxic goitre)	4
Toxic goitre	4
Nontoxic goitre	3
Mastectomies	5
Hæmorrhoidectomies	2
Total	158

We were privileged to be the first to use dipipanone for pneumograms and arteriograms. With i.v. solutions in a concentration of 0.005%, and using doses of from 10 to 35 mg., we have produced the following effects:

1. Complete calm in the patient.
2. The necessity of using only very small doses of thiopental, the average dose being 375 mg., which favours a rapid awakening in our patients.
3. The disappearance of the cough reflex in all cases.
4. A good opportunity to assist the patient's respiration if it becomes insufficient.
5. The maintenance of pressure of the cerebrospinal fluid at a clinical level. In 67 patients the pressure never rose above 220 mm. of water, except in one case where a diagnosis of cervical compression was made.
6. Finally, an absence of vomiting, which is usually common in these patients. Only 3% complained of nausea on awakening.

We have been able to conclude that the use of dipipanone is the technique of choice during pneumography and arteriography.

VIII. Craniotomies

Postoperative cerebral œdema is the great fear of neurosurgeons after excision of cerebral tumours. In many cases operation is performed under local anæsthesia, and in order to ensure the patient's comfort during these long operations, the lytic cocktail is often used. In three cases we have replaced the cocktail with dipipanone with good results.

IX. Rhinoplasties

We have used dipipanone by intravenous drip during rhinoplasties, being careful to administer the solution before induction with thiopental. A dose of 7 to 10 mg. given before the beginning of anæsthesia has allowed us to maintain systolic blood pressure between 70 and 80 mm. Hg in 47 of our 60 patients, despite the use of Fowler's position. We believe that the other patients have received the primary dose too slowly. Thus the blood loss during the whole operation was from 10 to 180 c.c. In view of the danger of blood transfusion reactions (20% formerly) and the scarcity of blood in our hospital blood banks, we consider that this method has great value. The average dose of dipipanone for rhinoplasties was 14 mg.

X. Ophthalmological Operations

Like many narcotics, dipipanone provides anæsthesia of the cornea; we have noticed this in the abolition of the corneal reflex several seconds before awakening. Also the eyeballs remain still and there is a myosis of the pupils from beginning to end. The employment of adrenaline solutions and the ability to use electrical instruments, together with the absence of vomiting postoperatively, make dipipanone a very useful drug for delicate eye surgery. Out of 21 patients in whom we have used this method, only two have shown vomiting of short duration after the anæsthesia.

XI. Cholecystectomy and Cholangiography

Here we have been able to demonstrate two new characteristics of this drug: (1) a slight increase in tension in the common bile duct, (2) an inhibitory effect of dipipanone on cholinesterase.

The use of x-rays contraindicates explosive substances. An appropriate technique consists in using nitrous oxide with the help of a narcotic or an analgesic. It is also necessary, in order to obtain a good visualization of the common bile duct by x-ray, that the sphincter of Oddi should not be closed by their use. From this point of view, morphine is contraindicated, for it raises the pressure of the common bile duct from a normal of 20 to 30 mm. of water to 200 to 300 mm.,[1] and in effect causes a block of the sphincter. In three cases we measured the pressure after doses of from 20 to 40 mg. of dipipanone and these pressures were 57, 37 and 40 mm. of water, which does not interfere with cholangiography. Further, we wish to report a fact noted in 31 cases where we have used succinylcholine bromide to obtain relaxation of the abdominal muscles; the amounts used were diminished by half compared to operations of similar sort. We would have liked to follow these observations further; a further project may give us this opportunity. We may then confirm our impression in a more definite manner that, like morphine, dipipanone has an inhibitory effect on cholinesterase.[1]

XII. Secondary Effects

We can state that in all our experience we have had no troublesome or severe secondary effects. They have been practically nil with employment of the intramuscular route. Some nausea (3%), rare vomiting (1%), occasional sedation and also, as observed by other workers, some dizziness in the upright position, were the most important side effects. With intravenous injection, we have witnessed certain secondary effects only when the speed of administration, the dosage, or the position of the patient was unsatisfactory. In these cases respiratory depression or hypotension occurred.

We have noted an incidence of approximately 2 to 3% of nausea or vomiting when the patient awakened. A small number of instances of urinary retention (2%) and constipation (1%) of very short duration was encountered. On the day after the operation, nausea and anoxia appeared in a few patients, but it must be noted that they were receiving at the same time other drugs which could have been involved. In any case, the rapid disappearance of all the secondary effects makes dipipanone a safe drug, where used with circumspection.

It is a drug which enlarges the field of action of the anæsthetist. Its very powerful analgesic properties have enabled us to diminish by half the doses of curare and thiopental. The patient's reawakening is fast and agreeable. We have been able to employ it in all aspects of surgery to good advantage. It also seems to us that during rhinoplasty, pneumography, arteriography and certain craniotomies, it presents definite advantages over other anæsthetic agents.

Summary

In this preliminary report we have demonstrated by clinical study on a number of unselected patients the obvious usefulness and advantages of Pipadone (dipipanone hydrochloride).

We wish to thank Burroughs Wellcome & Co. (Canada) Ltd. for giving us their financial help in this work.

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Résumé

La Pipadone est un nouveau narcotique synthétique. Dans ce travail, notre attention se porte sur l'utilisation clinique du médicament.

Nous avons tenté à l'aide de tableaux d'objectiver le fruit de nos observations.

D'une part, notre étude se concentre sur les principales propriétés des narcotiques: dépression respiratoire, hypotension, analgésie et sédation, etc. D'autre part, une série d'utilisation clinique en anesthésie nous fournit certains aspects particuliers de la Pipadone.

Ces considérations nous permettent de conclure que ce nouveau narcotique peut subir une comparaison avantageuse avec tous les autres. L.L.

TWO THOUSAND CASES OF FLUOTHANE ANÆSTHESIA

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THE NEW halogenated ethane $CF_3CHClBr$, known as trifluorochlorobromoethane (Fluothane) is now being used on this continent and has undergone clinical investigation since September 1956. This paper will describe a series of cases in which Fluothane was given by staff men, residents and interns. It was found that when the agent was given in a simple manner with due consideration of its properties and with reasonable precautions, some of the disadvantages were minimal or of little consequence.

Clinically, Fluothane is a potent anæsthetic agent. Its analgesic properties are slight, with central sedation. Fluothane decreases cardiac output and depresses the depth of respiration at levels of surgical anæsthesia; adequate oxygenation of the patient must therefore be maintained at all times. Cardiac arrhythmias are produced by Fluothane, particularly where atropinization is inadequate and when deeper planes of anæsthesia are used. Hypotension is noticed in most cases but the drop is small except when Fluothane is used in higher concentrations or in elderly patients.

This potent agent when used alone gives a rapid induction. Its prompt elimination through the lungs makes levels of anæsthesia easy to control. Fluothane does not cause coughing or breath-holding, nor does it stimulate bronchial or salivary secretions. In working concentrations, the vapour is non-irritant. There are indications that vomiting may be reduced. The availability of an anæsthetic agent in liquid form has many obvious advantages over a compressed gas, particularly in isolated areas or under emergency conditions when the supply of tanks is always a major problem. The compound forms a non-explosive mixture in air and oxygen.

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The dangers of Fluothane are that only small concentrations are necessary for induction and for deep planes of anæsthesia. The sense of smell cannot be relied upon for estimation of these concentrations. The rate of change of levels of anæsthesia is very rapid and the patient must be closely watched. Deep anæsthesia can be obtained in several large breaths if concentrations are high. Cardiac irregularities and hypotension may appear in light planes of anæsthesia in certain individuals and become more noticeable in deeper planes. Some authorities maintain that an agent with a working range of concentrations of under 2% requires microtechniques and that such techniques are potentially dangerous.

At the start of this series, the clinical properties of Fluothane were not well defined, and precautions were taken to avoid using toxic doses. Low concentrations were used in the earlier cases. With experience, higher concentrations were employed, but toxic effects were more often noted in these cases. The most noticeable clinical property was the high potency which allowed rapid deepening of the plane of anæsthesia and equally rapid recovery. We had expected to obtain adequate relaxation from Fluothane in deeper planes suitable for intra-abdominal operations but, as stated later, it was considered more advisable to use supplementary doses of muscle relaxants. Epinephrine was not used in conjunction with Fluothane because of its effect on the heart.

In this series, Fluothane was used as an adjunct[1] to light anæsthesia except in a small number of cases in which deeper planes of anæsthesia were purposely entered. As an adjunct, the agent has caused us little concern although it requires proper care and skill on the part of the anæsthetist.

The age of the patients ranged from three weeks to 87 years. Many had complicating diseases such as diabetes, cardiac failure, uræmia, thyrotoxicosis and impaired liver or kidney function. The maximum duration of Fluothane anæsthesia was over six hours, the average being one hour.

The following types of operations were performed: major general surgery, 749; minor surgery, 476; major urological, 110; minor urological, 191; major orthopædic, 110; minor orthopædic, 53; Cæsarean section, 10; E.N.T., 213; bronchoscopy, 29; thoracic, 4; and oral, 55 – a total of 2000 operations.

Premedication

Barbiturates and/or narcotics were used in the usual dosage for age and weight in 90% of the cases. Like other authors[1-3] we have been impressed with the necessity of using atropine in adequate dosage, especially in the adult. Many of the difficulties with Fluothane arose in cases given too little or no atropine. Without atropine, bradycardia, hypotension and extrasystoles were noticed, particularly in the older group. Hyoscine was used in a number of children, and generally was found to be satisfactory, although irregular pulse was sometimes noted. If atropine was not used as a premedication in the adult group, it was often found necessary to give it during the operation or in the immediate postoperative period. We do not feel that premedication had to be so light that the patient came to the operating room without sedation,[1] nor do we refuse Fluothane to those few patients who arrive for operation in a drowsy condition. It was noted in these latter cases that lower concentrations of Fluothane were adequate.

Promethazine (Phenergan) was tried in 35 cases on the grounds that its anticholinergic properties might be substituted for those of atropine, but it was not found satisfactory.

Induction

In infants, induction was by the "open drop" method. In small children, N_2O alone followed by O_2 and Fluothane, or N_2O+O_2+Fluothane with relaxant, was used. In older children and adults, the established method of intravenous thiopental was the method of choice.

A Schimmelbusch mask was used for open-drop induction in the youngest children. Fluothane was dropped on the mask at a slow rate. The speed of induction was considered to be rapid, and care was needed as the children entered deep planes of anæsthesia. Induction was dry and calm. Oxygen by catheter under the mask was considered a necessity, and depth of anæsthesia could be varied rapidly.

Induction with N_2O supplemented by Fluothane was found to be similar to that with cyclopropane, without struggling and vomiting, and the tendency to spasm and salivation.

When intubation was to be performed, relaxation was usually obtained by a suitable dose of succinylcholine chloride, except in the smaller children where sufficient relaxation was quickly and easily obtained with Fluothane in a light plane of anæsthesia. In all the methods of induction described above, the patients were ready for surgery in a few minutes.

Maintenance

In infants, maintenance was by open-drop with a catheter under the mask. In small children, anæsthesia was maintained with a flow of N_2O+O_2 4:2 l./min., plus Fluothane as required. A non-return valve was used. In older children and adults, maintenance was the same as above, but a semi-closed system with circle absorption was used. The average concentration for maintenance of anæsthesia using a non-return valve was 1.2%, and with a semi-closed system 0.8%, showing that some rebreathing occurred at the flow rates used.

Vaporizers

When this series was begun, the following vaporizers were tried: Foregger ether, Heidbrink-Trimar, Heidbrink ether, Marrett ether, Marrett Trilene and B.O.C. ether vaporizers. These types were calibrated with a total flow of 8 litres a minute, no allowance being made for such temperature changes as would be expected under normal working conditions. Fluid levels were maintained between readings by the addition of Fluothane at room temperatures. Vaporizers which showed a sudden rise in concentration when turned on to their higher levels were considered dangerous and in practice were found to be so. For general usage, we recommend a vaporizer that delivers a maximum concentration of 2.5%. One of us accidentally turned a trichlorethylene (Trilene) vaporizer full-on instead of full-off at the end of a case. The patient was ventilated with what was thought to be pure oxygen, and suddenly became pulseless and apnœic. He was rapidly brought back to normal when ventilated with pure oxygen. There is no doubt that any vaporizer can be used by the experienced anæsthetist if there is sufficient care and attention, but for all-round use only those that give an upper limit of 2-3% would seem advisable. Some of the standard vaporizers have to be modified. Any vaporizer can be easily calibrated without complicated apparatus or laboratory facilities. The position of the vaporizer in the circuit is of considerable importance. In this series, it was always situated so that only new gases passed through it.

In the majority of cases in this series, the Ohio Trimar vaporizer and the Marrett Trilene vaporizer without its central stem, were employed. Gases from the Trimar vaporizer were passed through the circle filter except when a non-return valve was used. The safety lock between the Trilene bottle and the soda lime canister was removed in the Marrett apparatus. Both were found to be extremely satisfactory.

Examples of modification of a vaporizer are illustrated in Figs. 1 to 3. Fig. 1 shows the Marrett Trilene vaporizer without modification at 8 l./min. delivering concentrations up to 15.4%. When the central stem is removed, the maximum concentration is 2.2% with an open scale in the range where it is most frequently used (Fig. 2). The Ohio ether vaporizer can be converted into the Trilene vaporizer (Fig. 3) by removing the wick

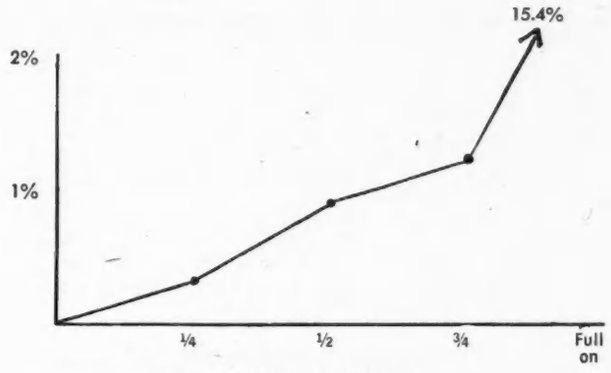


Fig. 1.—Marrett Trilene.

and replacing it with a Trilene stem and jar as provided by the manufacturer. This also gives an excellent scale. Calibration of wick-type vaporizers is not possible, as movement causes splashing of Fluothane up the wick, with marked variations in concentrations.

Respiratory System

Depression of respiration produced by increasing the amount of Fluothane was not a feature at

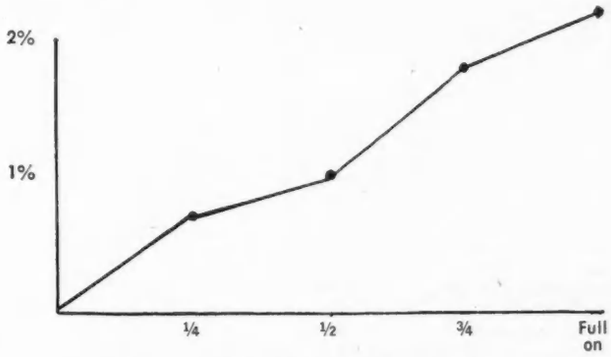


Fig. 2.—Modified Marrett (Trilene).

concentrations used in this series. Tachypnœa occurred in less than 1% of cases and could usually be corrected by reducing the concentrations of Fluothane.

Relaxants

In the early cases of abdominal surgery in this series, Fluothane was used without a relaxant. Relaxation was not adequate in the lighter planes

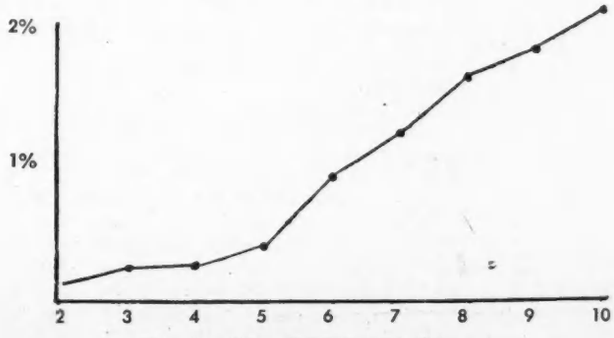


Fig. 3.—Ohio Trimar vaporizer.

of anæsthesia and when it was satisfactory in the deeper planes, hypotension and hypopnœa usually developed. Because of the side effects of Fluothane, it was felt that supplementary use of muscle relaxants was in all circumstances superior because it permits a lighter plane of anæsthesia at all times without the deleterious effects of Fluothane. Succinylcholine chloride was used in graduated doses up to 40 mg. when intubation was performed. It was also used as a muscle relaxant in drip form in 559 cases in conjunction with N_2O+O_2+Fluothane with controlled respirations. A striking feature observed in these cases was the reduction in the amount of succinylcholine required. Burn *et al.*[4] have claimed that succinylcholine chloride is antagonized by Fluothane. It was our clinical impression that the amount of succinylcholine chloride used in a continuous drip for abdominal relaxation was less if Fluothane was the adjunct to N_2O+O_2 anæsthesia than if meperidine (Demerol) was the adjunct. In 25 cases, Fluothane and meperidine were compared as used by one anæsthetist. The average dose of succinylcholine with Fluothane was 2.3 mg./min., whereas the requirement of meperidine was 5.1 mg./min. These findings are not necessarily contrary to those of Burn, as there is possibly a dual action during continued succinylcholine administration.

The persistent hypertension sometimes seen with N_2O+O_2+meperidine and succinylcholine, which is unrelieved by hyperventilation, was absent when meperidine was replaced by Fluothane as the adjunct. Tubocurarine was used as a muscle relaxant in 36 cases. We were not able to confirm Johnstone's[2] observations that marked hypotension will develop when this relaxant is used. Up to 15 mg. of tubocurarine was used in a single dose with a total dosage of 54 mg. No marked drop in blood pressure was noted other than would be accounted for by Fluothane alone.

In 397 cases, gallamine triethiodide (Flaxedil) was used with single doses of 120 mg. up to a total of 300 mg. Laudexium methylsulfate (Laudolissin) was used in seven cases.

Cardiovascular System

In this series, pulse rates were slowed in proportion to the depth of anæsthesia and to the concentrations used. In the aged, the slowing of the pulse is more marked. Arrhythmias in the form of extrasystoles or pulsus bigeminus were more apparent in the absence of atropine.

In cases where Fluothane and gallamine were used together, bradycardia was less apparent than when other relaxants were used. Riker and Wescoe[5] have pointed out that gallamine paralyzes the action of vagus on the heart. It is probable that this effect may give gallamine special significance during Fluothane anæsthesia.

Hypotension

The hypotensive effect of Fluothane has been commented on by many authors. We have frequently noted some hypotension, of little consequence in the majority of cases; a drop of 10 mm. Hg systolic is often seen. In five cases, Fluothane was used as a hypotensive agent by using concentrations in excess of normal requirements. Manually assisted respirations were usually required, and furthermore there was a tendency to bradycardia and extrasystoles.

In eight cases, phenacylhomatopinium chloride (Trophenium) was used with Fluothane, and a very satisfactory hypotensive state was obtained. In the aged, a more marked degree of hypotension was noted when Fluothane was used. When the concentrations of Fluothane were reduced, the blood pressure usually returned to normal levels. In a few of these geriatric cases, it was thought advisable to discontinue Fluothane because of excessive hypotension.

Hypotension in some cases with low concentrations of Fluothane was presumed to be due to inadequate atropinization; addition of atropine corrected the hypotension without the necessity of reducing the concentration of Fluothane.

Waking Time

All patients to whom this agent was administered recovered consciousness rapidly, irrespective of the duration of use. Most patients could respond to a simple command a few minutes after the termination of anæsthesia.

Vomiting

Vomiting was infrequently seen at the end of operation.

Summary

In 2000 patients, Fluothane was used as an adjunct to N_2O+O_2 anæsthesia with semi-closed or non-return systems except in a few instances. Standard premedication was used in the majority of cases; adequate atropinization was shown to be essential for Fluothane anæsthesia.

The vaporizer was placed so that only the new gases passed over it.

The concentrations delivered must be accurately known with respect to the conditions under which Fluothane is used. Some types of vaporizers must be modified for such use.

Hypotension was not considered to be a major factor.

The persistent hypertension observed when meperidine is used as an adjunct to N_2O+O_2 and succinylcholine was not experienced when Fluothane was the adjuct.

All relaxants were used with Fluothane without ill effects. The amount of succinylcholine chloride required as a relaxant with Fluothane was less than with meperidine. Fluothane was used in all age groups; lower concentrations should be employed in the elderly.

The Fluothane used in this study was provided by Ayerst, McKenna & Harrison, Ltd., Montreal.

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Résumé

Les auteurs rapportent ici les résultats cliniques de l'administration de Fluothane à 2,000 malades. On l'employa comme adjuvant de l'anesthésie au protoxyde d'azote en circuit semi-ouvert ou sans retour, sauf dans de rares exceptions. La pré-médication habituelle fut employée dans la majorité des cas, et il importe que les sujets reçoivent une dose convenable d'atropine. Le vaporisateur fut introduit dans le circuit de manière à ce qu'il ne soit exposé qu'aux gaz neufs. Il est fort important de connaître la concentration exacte de cet anesthésique par rapport à l'usage qu'on veut en faire. Certains vaporisateurs exigent quelques modifications pour permettre ce degré de précision. L'hypotension obtenue fut de peu d'importance. En présence de succinylcholine et de protoxyde d'azote on n'observa aucune hypertension avec l'emploi de Fluothane comme on en trouve lorsqu'on se sert de Démérol. Tous les curarisants furent employés avec le Fluothane sans effet fâcheux. Lorsqu'il sert d'adjuvant à l'anesthésie la quantité requise de chlorure de succinylcholine est moins élevée que lorsque l'adjuvant est le Démérol. Des malades de tout âge reçurent du Fluothane; les patients âgés ne demandent qu'une faible concentration.

DANGER! DOCTORS AT WORK

"Finally, there is the $64 question: Does medicine as we practise it really benefit mankind in the long run. It is possible to argue that doctors, by saving the lives of mental defectives, hæmophiliacs, diabetics, and the like, are perpetuating undesirable genetic strains that would otherwise die out; and that by keeping old people alive they are throwing an ever-increasing economic burden on to the younger members of the community. Philosophers may argue these points as they will; we, as doctors, are not required to answer them. A doctor's task is to heal the sick and to alleviate suffering, without thought of his patient's age, colour, nationality, religion, or social worth. If he departs from this principle he is lost. The only really serious danger of any system of State medicine is that economic or political considerations might come to be regarded as important enough to interfere seriously with it. Such a contingency is remote in this country, but we have seen it happen under totalitarian regimes elsewhere."—J. Forbes, *Lancet*, 2: 1226, 1958.

MENTAL HEALTH IN THE UNIVERSITY

"Fortunately, it is becoming increasingly recognized that some men and women of undergraduate age need psychological help which they should not be ashamed to seek, nor society reluctant to provide. Psychiatry has an important advisory and therapeutic part to play but it has not, nor should it seek, any monopoly in this field. The tutor, the general practitioner, and the psychiatrist, each has a part to play; but it is important that the availability of the various sources of skilled help should be known to undergraduates and, at least as important, that those providing the help should be known to each other so that men and women in need of help are most likely to make contact with the source of skilled help appropriate to their difficulty."—B. W. Davy: *Cambridge Univ. M. Soc. Mag.*, 36, 2, 1959.

SCURVY AND ITS PREVENTION BY VITAMIN C FORTIFIED EVAPORATED MILK*

DAVID GREWAR, M.B., Ch.B., D.C.H., M.R.C.P., *Winnipeg*

OUR EXPERIENCE with almost 40 cases of infantile scurvy in Manitoba between 1953 and 1958 encourages the belief that this disease could be abolished by the simple expedient of fortifying evaporated milk with vitamin C. An opportunity to test the efficacy of such a product by its application to the cure of three cases of infantile scurvy has now presented itself and is here reported. It is reasonable to assume that a product capable of curing scurvy would easily prevent it. The product,† a partially skimmed evaporated milk, was fortified with vitamin C as well as vitamins A and D at the time of its manufacture so as to contain not less than 5 mg. of ascorbic acid per fluid ounce of evaporated milk (approximately 75 mg. per standard 15-oz. can). In order to add to the rigour of testing, the cans of milk were left in a warm room for more than six months before being opened and used. The milk was then prepared for formula in the usual way by mixing with equal parts of water and adding white sugar. The standard hospital practice of terminal sterilization was employed before the formula was used in the test cases (autoclaving at 215° F. for 15 minutes). Random samples of formula thus treated were tested on two occasions for vitamin C content by the Department of Biochemistry, University of Manitoba Medical School. The results are shown in Table I.

TABLE I.—VITAMIN C CONTENT OF VITAMIN C FORTIFIED P.S.E.M. FORMULA

Sample A (used in Case 1)	*Mg. vitamin C/reconstituted quart*
Before terminal sterilization	103
After terminal sterilization	74
Sample B (used in Case 3)	
After terminal sterilization	94

Three consecutive cases of infantile scurvy at the Children's Hospital of Winnipeg during the three month period December 1958 – February 1959 were treated with this formula as their only source of diet for a period of three weeks. They received no other source of vitamin supplement during the test. In two of the three cases, however, intercurrent respiratory infection required antibiotic treatment.

*From the Department of Pædiatrics, University of Manitoba, and The Children's Hospital of Winnipeg.

†"Nutrilac", supplied by Borden Co. of Toronto, Canada. The product will subsequently be referred to as vitamin C fortified P.S.E.M. (vitamin C fortified partially skimmed evaporated milk).

CASE REPORTS

CASE 1.—R.B., a boy, aged 8 months, admitted to the Children's Hospital on November 12, 1958, from the out-patient department with a provisional diagnosis of poliomyelitis or an unspecified lesion of lumbar vertebræ.

For two weeks he had been screaming whenever moved or handled. He was the second-born of indigent parents. He had been fed an evaporated milk formula since birth and intermittently some cereal, but no other dietary supplements. He had received no regular health supervision or any form of immunization, although visited on more than one occasion by a public health nurse who urged attendance at a local child health centre.

The infant was irritable and pale, but well nourished. The legs were tender and the limbs appeared weak. A lumbar puncture was done on suspicion of poliomyelitis. The spinal fluid was normal. After admission, acute angulation at the costochondral junction was noted and a radiograph of the long bones confirmed the presence of active scurvy. The findings included Fraenkel's line with juxtaepiphyseal radiolucency, loss of bone trabeculation, and pencilling effect of the peripheral margins of the epiphyses, as well as the "corner sign" (Fig. 1). A radiograph of the chest showed considerable expansion of the costochondral junctions, but was otherwise normal. The other investigations, including hæmogram, urinalysis, electrocardiography and tests of the stool and serum for neurotropic virus, were all negative. The serum ascorbic acid was 0.14 mg. % (average normal 0.55 mg. %; scurvy range of deficiency 0-0.3, saturation 1-2 mg. %).



Fig. 1a Fig. 1b

Radiological changes in infantile scurvy after the use of vitamin C fortified P.S.E.M.

Fig. 1a.—Case 1, before treatment. Fig. 1b.—After 2 weeks of vitamin C P.S.E.M.

He was given vitamin C fortified P.S.E.M. formula, taking between 30 and 36 oz. daily. He received no other treatment and no other source of vitamin C. Within five days there was general improvement in disposition. He became less irritable and less resentful when the lower limbs were handled. He was soon playful, happy and free of tenderness of the limbs. Improvement was maintained and after two weeks, radiographs of long bones showed signs of healing scurvy (Fig. 1b). He was, by now, in all respects a normal healthy infant.

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The serum ascorbic acid levels showed a rise at eight days to 0.18 mg. % and at 21 days to 1.34 mg. %.

CASE 2.—H.C., a boy aged 10 months, was admitted to the Children's Hospital on December 10, 1958, from the out-patient department with a provisional diagnosis of bilateral otitis media and possible meningitis.

His ears had been discharging for two days after a "head cold" and for about one week he had been irritable, especially when his legs were moved. He was quiet when at rest in his carriage but showed stiffness and pain in the legs when diapers were changed, and he resented attempts to pick him up. He was the youngest of eight children. The father was periodically employed as a truck driver. The family lived in poor circumstances, in an overcrowded, ill-furnished home, and required financial aid from time to time from welfare agencies. The child had been fed an evaporated milk formula from the time of birth and also canned baby foods from time to time since five months of age. He had received no other dietary supplements, although these had been recommended by a visiting public health nurse. He had no health supervision and had not been immunized in spite of the mother's being made aware of free infant welfare clinic services close at hand.

Physical examination: The infant looked ill, although he was well nourished, and cried almost incessantly whenever handled. He screamed whenever his legs were touched. Left alone, he lay quietly in the "pithed frog position". There was bilateral suppurative otitis media. A lumbar puncture was performed. The spinal fluid was normal. Scurvy was considered as an alternative diagnosis, and radiographs of the long bones confirmed its presence. Fraenkel's line, pencilling of the epiphyses and loss of trabeculation were apparent (Fig. 2a).

A radiograph of the chest showed expansion of the costochondral junction and a right-sided bronchopneumonia. A coagulase-positive *Staphylococcus aureus* was isolated from the ear discharge. The hæmogram was normal apart from a neutrophilia. Urinalysis and electrocardiogram were normal. On account of a misunderstanding, the serum ascorbic acid was not estimated.

He was given vitamin C fortified P.S.E.M. formula and an antibiotic. He received no other treatment. He took between 24 and 36 oz. of formula daily. There was a definite clinical remission in the signs of scurvy by the sixth day, when the limbs were no longer tender. He was playful and enjoyed being lifted and handled. After two weeks, radiographs of the long bones showed healing scorbutic changes (Fig. 2b). The otitis media and pneumonia soon resolved and the general clinical remission was maintained.

CASE 3.—L.R., a boy aged 10 months, was admitted to the Children's Hospital on January 26, 1959, from the out-patient department with a provisional diagnosis of scurvy or osteomyelitis involving the lower limb.

For three weeks his legs had seemed painful. He cried whenever diapers were changed, and showed no inclination to sit up or attempt to stand as he had done before. There was no history of trauma. He was the youngest of eight children whose father had recently become unemployed. The mother, described as a good homemaker, had successfully reared the other children, none of whom had had any similar complaint.

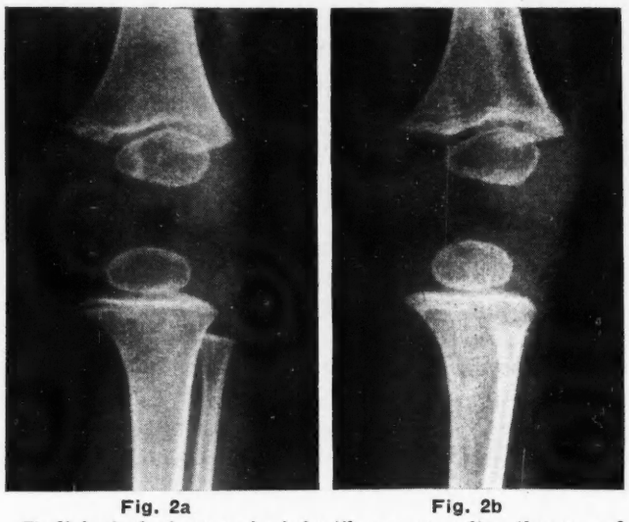


Fig. 2a Fig. 2b

Radiological changes in infantile scurvy after the use of vitamin C fortified P.S.E.M.

Fig. 2a.—Case 2, before treatment. **Fig. 2b.**—After 2 weeks of vitamin C P.S.E.M.

She had been unsuccessful with breast feeding in her first two children, and this infant had been given an evaporated milk formula since birth. He had been offered cereals and canned baby foods intermittently. He had received no vitamin supplements except for two sample bottles given at the time of his mother's six-week post-natal examination. This supply, given regularly in the usual 5-drop daily dose, would last no more than three weeks. He had received no regular medical supervision, and the mother disregarded most of the advice of a visiting public nurse, who eventually referred him to the hospital. He had not been immunized.

The infant was rather pale but well nourished. He was quite content to lie in his mother's lap, but cried out in pain whenever his legs were moved or handled. The diagnosis of scurvy entertained in the out-patient department was confirmed by radiological examination of the long bones. Fraenkel's line, loss of trabeculation, and pencilling effect of the epiphyseal centres as well as the "corner sign" were present. He was admitted to hospital where the only other notable physical finding on palpation of his chest wall was acute angulation of the costochondral junction.

Hæmogram and serum iron estimation indicated a mild hypochromic microcytic anæmia. Urinalysis and electrocardiogram were negative. Serum ascorbic acid was 0.35 mg. %.

He was given vitamin C fortified P.S.E.M. formula as his only diet. He developed an intercurrent otitis media and bronchitis which necessitated antibiotic therapy. The intercurrent respiratory illness made difficult an accurate clinical assessment of his response to the anti-scorbutic formula, but there was a notable improvement in his general condition and well-being by the sixth day. The limbs by then showed no tenderness and he was just about willing to try to pull himself up and bear weight on his lower limbs. Radiographs of the long bones after two weeks showed healing scurvy. The serum ascorbic acid level showed a fourfold rise to 1.4 mg. % on the tenth day. The respiratory infection resolved.

DISCUSSION

It is evident in this clinical experiment that all three cases of active infantile scurvy promptly re-

covered when vitamin C fortified evaporated milk formula provided their only source of vitamin C. The clinical signs of recovery were supported by serial radiological changes demonstrating healing, and in two cases by measurement of the serum ascorbic acid showing a rise from scorbutic levels into the healthy normal range.

TABLE II.—SERUM ASCORBIC ACID LEVELS (MG.%) AFTER USE OF VITAMIN C FORTIFIED P.S.E.M.

	Days			
	0	*8*	*10*	*21*
Case 1	0.14	0.18	——	1.34
Case 3	0.35	——	1.4	——

The average interval of five days between the start of the vitamin C fortified P.S.E.M. formula and the quite dramatic general improvement with loss of tenderness of limbs and return of activity compares favourably with the response to conventional therapeutic regimens using ascorbic acid in various forms and dosage. The infants showed favourable weight gain during the period of the experiment. The vitamin C fortified P.S.E.M. formula was continued as the sole diet for three weeks, when, there being no signs of relapse, the experiment was discontinued and before discharge the infants were placed on a mixed diet with vitamin supplements. The product had been subjected to the adverse effects of prolonged storage in cans at warm temperature and sterilization by heat after opening of the cans and mixing with water. It is not likely that everyday domestic use would impose any greater challenge to the preservation of anti-scorbutic quality.

The practicability of evaporated milk as an anti-scorbutic vehicle is evident, and its potency is proven by the exacting test of cure of clinical scurvy. It is therefore desirable to adopt the fortification of evaporated milk with vitamin C as standard practice for the following reasons.

1. Breast feeding, the only natural protection against scurvy, is unfortunately in decline and the great majority of infants nowadays are artificially fed. Evaporated milk has achieved wide acceptance in this regard, so that its fortification with vitamin C would provide wide anti-scorbutic protection. In fact, one would expect the same reduction in incidence of scurvy as occurred with rickets when evaporated milk was fortified with vitamin D.

2. Overt infantile scurvy is endemic in several areas of Canada.[2] It is notable that following a previous report of 33 cases at the Children's Hospital, Winnipeg, from 1953 to 1956, no further cases appeared until November 1958. Since then a further four cases have been admitted. The diagnosis in the first two of these recent admissions was at first overlooked, and this in a centre sensitive to the incidence of scurvy. It is not unreasonable to suggest that there are many missed cases of scurvy in both its overt and subclinical forms.

3. The disease occurs for the most part in circumstances of poverty and ignorance. The best preventive efforts of public health authorities are often defeated by contrariness and lack of co-operation as well as by inaccessibility. There always will be a hard core of people who will not avail themselves of public health facilities, even when close at hand, in spite of earnest efforts on the part of nurses and others to educate and advise.

4. Geographical location and several physical and social factors often dictate the use of evaporated milk as a staple article of diet without supplementary sources of vitamin C, such as citrus fruits. The Indian and Eskimo tribes, forsaking their traditional feeding habits for the white man's food, and the elderly and often edentulous widower living on tea, bread and milk come freely to mind as examples.

5. The additional cost of the vitamin C fortification of evaporated milk is negligible. There are no contraindications to receiving vitamin C and no ill effects from excess of it.

SUMMARY

A clinical experiment is described which demonstrates the efficacy and practicability of vitamin C fortified evaporated milk as an anti-scorbutic.

Three infants with overt scurvy recovered promptly when such a product was used to provide their only source of vitamin C.

The fortification of evaporated milk with vitamin C as standard practice is advocated as a realistic means of preventing infantile scurvy.

I wish to thank Professor Harry Medovy for his advice and encouragement in this study.

The ascorbic acid content of the P.S.E.M. formula was carried out by H. J. Suderman, Assistant Professor of Biochemistry, Department of Biochemistry, University of Manitoba.

The serum ascorbic acid levels were estimated by the Clinical Nutrition Laboratory, Department of National Health, Ottawa, Canada.

The vitamin C P.S.E.M. formula was supplied by The Borden Company, Toronto, Canada.

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RÉSUMÉ

Le scorbut infantile gagne de l'importance depuis quelques années comme le reflètent certains articles parus antérieurement dans cette revue. L'auteur de la présente communication préconise l'emploi de lait évaporé enrichi d'acide anti-scorbutique comme moyen simple et efficace de prévenir cette déficience vitaminique. Il montre comment une préparation fournie par une laiterie de Toronto sous le nom de "Nutrilac", et ne contenant pas moins de 5 mg. de vitamine à l'once a rétabli le niveau normal d'acide anti-scorbutique chez trois enfants atteints de scorbut. Il semble que la stérilisation à l'autoclave du lait évaporé, reconstitué à son volume normal, n'abaisse pas de façon importante la teneur en vitamine C. Quant au produit lui-même, il semble se conserver indéfiniment dans ses boîtes métalliques scellées, à température de la chambre. L'auteur insiste sur le fait que si cette préparation permet de guérir le scorbut une fois déclaré, *a fortiori* en préviendra-t-elle le développement.

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Case Reports

FATAL MYOCARDITIS COMPLICATING INTERSTITIAL PNEUMONITIS: A REPORT OF THREE CASES*

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ACUTE NON-RHEUMATIC myocarditis is a not uncommon but usually unexpected finding at autopsy. Saphir,[1] in his excellent review of myocarditis, reports 186 cases of non-rheumatic myocarditis in 5626 consecutive autopsies on adults. A similar study by Saphir on children showed an incidence of 6.8%. Fine, Brainerd and Sokolow,[2] using serial clinical and electrocardiographic examination on 84 cases of various infectious diseases, report 5.9% borderline electrocardiograms suggestive of myocarditis.

Frequently an isolated idiopathic or Fiedler's myocarditis[3-5] is the only autopsy finding, although Tedeschi and Stevenson[3] point out that a concomitant upper respiratory infection or interstitial pneumonia is found sufficiently often to suggest that perhaps "isolated myocarditis is in reality a manifestation of a more generalized disease process".

Schmidt,[6] in experimental work with apes suffering from myocarditis, was able to isolate a virus which induced an acute myocarditis and encephalitis in mice.

Finland[7] and Bowen[8] have reported acute myocarditis complicating influenzal pneumonia, and the isolation of influenza A virus from lung tissue. Javett[9] and Kibrick and Benirschke[10] have reported isolation of Coxsackie B virus from four infants with acute myocarditis, pneumonitis and encephalitis.

During a four-month period from April to August 1958, there were three cases of sudden death at the Royal Columbian Hospital, which at post-mortem examination presented similar and unexpected pathological findings. In each case the history suggested a common etiological agent.

CASE 1.—A 36-year-old woman, who was in good health until three weeks before admission to hospital, developed a slight cough with wheezing and dyspnœa. Initial examination revealed what appeared to be a mild pneumonitis and she was given antibiotics at home. Her condition failed to improve, and three days before admission to hospital she developed fever, chills and increasing dyspnœa. Her cough was productive of a small amount of clear mucus, which in hospital was noted to be bloodtinged. On admission, she was severely dyspnœic, cyanosed and in shock. There was some injection of the pharynx, the respiratory movements were rapid and laboured, and there were rales throughout both lung fields. The cardiac apex was not displaced. The apex rate was 100, and the blood pressure 60/40 mm. Hg. A chest radiograph showed a mottled density obscuring the lower two-thirds of the right lung field and a similar perihilar type of density on the left side. There appeared to be pleural thickening at the right costophrenic sulcus. The appearance was suggestive of bilateral pulmonary œdema, but an extensive bilateral pneumonitis could not be ruled out. The patient failed to respond to emergency treatment of shock and died approximately four-and-a-half hours after admission.

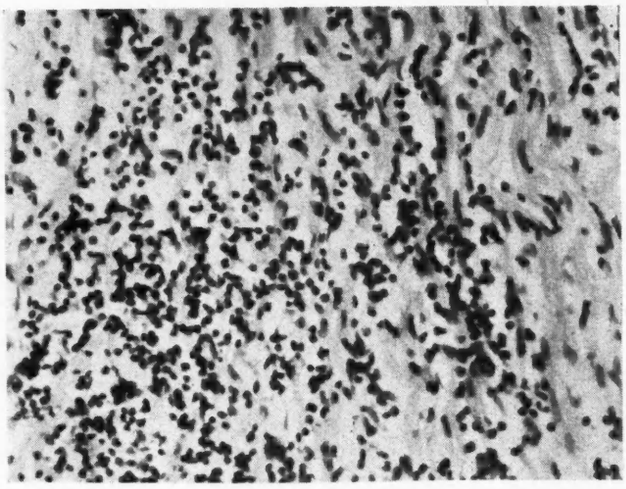


Fig. 1.—Case 1. Photomicrograph of myocardium showing marked lymphocytic infiltration. H & E stain × 300.

At autopsy, the heart weighed 475 grams and was normal in shape. The ventricular myocardium was pale, with slight yellowish mottling and hyperæmia in the subepicardial area. The valves were quite normal and the coronary vessels showed slight atherosclerotic plaque formation. There was slight atheromatous change in the aorta. The left lung weighed 675 g., the bronchi contained a small quantity of tenacious mucus, and the cut surface was firm and congested in appearance. The right lung weighed 950 g. and there was approximately 700 c.c. of clear, straw-coloured fluid in the right pleural cavity. There were a few dense pleural adhesions in the right pleural gutter. On palpation there was some nodularity to the lung, especially in the inferior segment of the right upper lobe. Examination of the cut surface showed congestion and patchy areas in which there were firm greyish cords. There was a small amount of mucus in the bronchial tree. The liver weighed 2050 g. and was normal on the external surface. The cut surface showed a nutmeg appearance. The spleen weighed 350 g. and was markedly congested. The stomach and duodenum showed numerous small petechial hæmorrhages in the mucosa. The kidneys weighed 190 and 200 g. and were normal on the external surface and the cut surface. The renal pelvis showed numerous petechial hæmorrhages in the mucosa. The cranial cavity and contents showed no unusual features.

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Microscopic:

The lungs showed that many alveoli were filled with fluid and numerous heart failure cells. The alveolar walls were thickened and in some areas lined by a very dense hyaline membrane. There were scattered lymphocytes and macrophages throughout the interstitial tissue. The myocardium showed œdema of muscle fibres, patchy areas of necrosis and large numbers of lymphocytes and macrophages. The liver showed moderate central lobular congestion. Sections from the stomach showed small areas of interstitial hæmorrhage in the submucosa. The spleen and kidneys were markedly congested. Sections from the brain showed no abnormality.

CASE 2.—A 15-month-old girl was admitted to hospital on July 29, 1958. Her mother stated that for a period of three weeks before admission the child had been generally unwell, although there were no specific signs or symptoms. On questioning, the mother stated that the child had been losing weight, and that three days before admission she developed swelling, particularly about the eyelids and cheeks. Her respirations became more rapid and grunty in character. On admission to hospital the child was in shock. She was afebrile, but her respiration rate was 44 and she was in great respiratory distress. She had moderate œdema of the face, hands and feet. The external jugular veins were markedly distended. Examination of the chest revealed harsh breath sounds, but with adequate air entry and no adventitious sounds except at the base of the right lung where transmission of breath sounds was somewhat diminished. The heart sounds were muffled and the apex rate was 40. The abdomen was protuberant, with a fairly large umbilical hernia. The liver was palpable three fingers'-breadths below the right costal margin. The spleen was just palpable. There was demonstrable ascites. Examination of the nervous system revealed no specific findings. Chest radiography revealed a cardio-thoracic ratio of 10 to 15.5 cm. There were increased vascular markings and a homogeneous shadow in the middle third of the right lung field. The findings were interpreted as cardiac enlargement with pulmonary congestion.

Laboratory findings.—Hæmoglobin value 10.7 g. per 100 ml.; W.B.C. 12,700; differential count, neutrophils 45, lymphocytes 49, monocytes 4, eosinophils 1. E.S.R. 3 mm. in one hour.

Urinalysis.—W.B.C. 1-2 per high power field, R.B.C. 1 to 3 per high power field, protein—plus 2. Microscopic: A few epithelial cells and occasional granular casts. E.C.G. indicated a sinus rhythm with a heart rate of 140. The heart was rotated but otherwise there was no abnormality.

Digitalization was carried out with some temporary improvement, but the child died suddenly approximately 28 hours after admission.

At autopsy, there was œdema of the face, hands and feet. There was a moderate amount of clear, straw-coloured fluid in both pleural cavities, and the pericardial cavity contained a large amount of clear fluid. There was very marked cardiac enlargement, with pronounced dilatation of the left ventricle. The endocardium and myocardium showed no gross abnormality. The lungs were uniformly firm to palpation, and the cut surface showed a marked congestion. The pulmonary vessels and bronchi were not abnormal. The peritoneal cavity contained a moderate amount of clear, straw-coloured fluid. The liver was very large and presented a nutmeg appearance. The spleen was slightly enlarged and congested. There was no gross abnormality of the kidneys.

Microscopic:

The myocardium showed marked œdema and aggregations of lymphocytes throughout the field. There was no apparent necrosis of muscle, and there were no Aschoff nodules. The lungs presented a solid appearance with scattered dilated alveoli and very pronounced thickening of the interstitial tissue. The interstitial tissues showed hyalinization with scattered lymphocytes, polymorphonuclears and numerous large phagocytic cells. Many of the alveoli contained fibrinous exudate and numerous large phagocytic cells. Sections from kidneys showed many of the collecting tubules to be filled with red cells and there was cloudy swelling of the convoluted tubules. The spleen was very congested. Unfortunately, examination of the brain was not carried out in this case.

CASE 3.—A 2½-year-old girl was seen by her doctor in July 1958, because of fever and cough of two days' duration. Her past history was negative with the exception of an episode of measles in February 1958, from which she appeared to recover fully. She was pale, listless and somewhat undernourished, with a temperature of 100.2° F. There was slight injection of the pharynx, but no enlarged lymph nodes. Examination of the chest revealed no rales or rhonchi. The child was given chloramphenicol for two days, but because of vomiting this was discontinued and she was given penicillin by injection. The mother stated that the child seemed considerably improved on this therapy, and further examination on August 5, 1958, revealed no physical signs and a normal temperature. On August 12, 1958, the child again developed fever and cough. The following day she showed increasing respiratory stress and was admitted to hospital. She was then very pale and severely dyspnœic. An admission chest radiograph showed increased bronchovascular markings bilaterally, suggesting a bronchopneumonic process. The cardio-thoracic ratio was 10.5 to 17.

Laboratory findings.—Hb value 10.7 g. %, packed cell volume 32%, E.S.R. 17 mm. in one hour. W.B.C. 7000.

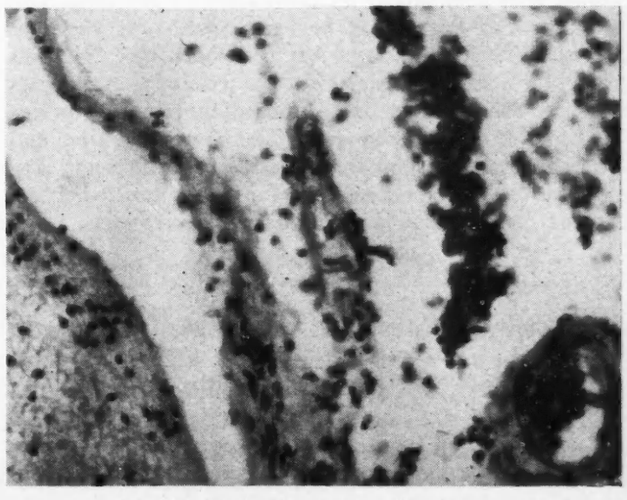


Fig. 2.—Case 3. Photomicrograph showing aggregates of lymphocytes in meninges. H & E stain × 300.

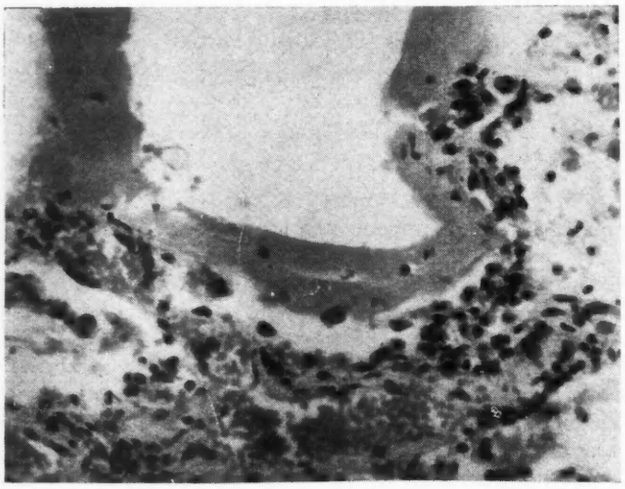


Fig. 3.—Case 3. Photomicrograph of lung showing dense hyaline membrane and scattered macrophages and lymphocytes in the interstitial tissue. H & E stain × 300.

Differential: neutrophils 60, staff 20, lymphocytes 18, monocytes 1, metamyelocytes 1. Bacteriology: swabs from nose and throat cultured a heavy growth of diphtheroids, *Strep. viridans* and *N. catarrhalis.*

The child was placed in a croupette and given intensive chloramphenicol therapy. She rapidly became cyanosed and died approximately 1½ hours after admission.

At autopsy, external examination of the body was negative. There was bilateral bloody pleural effusion, and both lungs were very œdematous. The bronchial tree and pulmonary vessels were normal. The heart was of normal size and configuration. The abdominal cavity contained a small amount of bloodstained fluid. The abdominal organs were normal in size, shape and position. The brain was œdematous, but otherwise unremarkable.

Microscopic:

Sections from the brain showed numerous subarachnoid aggregates of lymphocytes. Sections from the myocardium showed œdema, lymphocytes scattered throughout the field and patchy areas of necrosis. Sections from the lungs showed diffuse thickening of the alveolar walls with deposition of fibrin, numerous lymphocytes and phagocytes. Many of the alveoli were lined by a dense hyaline membrane. In the liver there were scattered lymphocytes throughout the parenchyma, but there was no evidence of liver necrosis. The adrenals were unremarkable. Sections from the kidneys showed numerous lymphocytes scattered throughout the interstitial tissue, particularly in the subcapsular area. There was swelling and some necrosis of convoluted tubular epithelium. The glomeruli were unaffected. Many of the collecting tubules contained a large number of red cells.

DISCUSSION

The natural history and pathological findings in each of the three cases presented suggests a common viral etiology. In all probability, the onset of myocarditis led to acute heart failure and the untimely fatal outcome. The nature of the disease process was not suspected until microscopic examination of tissues was done, and this largely precluded the possibility of carrying out viral studies.

The pathological physiology of myocarditis in viral diseases is not completely understood. Lesions may be due either to the toxic products of viral disease, or direct viral invasion of the myocardium.[9] One of our cases showed microscopic evidence of nephritis, hepatitis and meningitis, which makes it tempting to postulate the occurrence of a viræmia with direct invasion of these organs.

SUMMARY

Three cases of sudden, unexpected death attributable to acute myocarditis are presented. All three cases were in females, aged 15 months, 2½ years, and 36 years. In each case there were symptoms and signs of a rather mild respiratory infection, beginning three to four weeks before the acute fatal episode. The pathological findings were strikingly similar and consisted of a marked interstitial pneumonitis and myocarditis. One case showed in addition microscopic evidence of hepatitis, nephritis and meningitis.

ADDENDUM:

Oseasohn, Adelson and Kaji[11] recently reported 33 fatal cases of influenza, 12 of which had interstitial pneumonia with hyaline membranes. Acute myocarditis was present in 10 cases. Asian influenza virus was isolated from various tissues, and this is possibly the first recorded instance of viral isolation from the myocardium. The pathological picture in these cases coincides with our findings, although the duration of illness was somewhat shorter and unaccompanied by a latent period before the acute fatal episode.

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INTEGRATING THE SPECIALTIES

"This problem of integration between different fields is an enormous one today, particularly with increasing specialization. The answer may be the setting up of professorial chairs specifically for such integration, to be filled by persons with training in two or more fields and having the necessary synthetic type of mind. If this does not happen, one can foresee a time when there will be a beautiful understanding and analysis of many tiny parts but no one who can put the bits back together again to make the thing run. There is also the difficulty of communication between these different specialties and the need for interspecialty interpreters—not just on account of the volume of the work produced but also because of the increased technicality of the language involved."—M. H. Sheard: *Connecticut Med.*, 23: 242, 1959.

SALICYLATE INTOXICATION IN THE ELDERLY

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SALICYLATE INTOXICATION in pædiatric practice is not uncommon. Salicylate compounds are known to have caused 113 deaths in the United States in 1952, 86 of them in children under five years of age.[11] Poisoning in adults is usually caused by the ingestion of massive doses of salicylate in a suicidal attempt.[5] With the greater number of older people in our population and the consequent increase in degenerative diseases controllable with salicylates, this problem may well increase in magnitude. The following presentation is of interest because of the rarity of this condition in elderly patients.

An 89-year-old white woman was admitted to the emergency department of the Hamilton General Hospitals at 4.15 p.m. on December 6, 1958, with a history of having taken 100-200 five-grain tablets of acetylsalicylic acid approximately 48 hours earlier. She had been taking this drug for the control of pain of a mild chronic osteoarthritis for many years, hence a large supply was readily available. She became more lethargic and confused than usual that night, and had vomited an unknown number of these tablets. The day before admission she had continued to vomit; hospital admission was refused by the patient at this time. The day of admission she became more stuporous, and transfer to hospital was arranged.

The right breast had been amputated 25 years before. The family had been told many years ago that the patient suffered from diabetes mellitus, but no investigation or treatment had been undertaken.

On examination she was semicomatose and moderately dehydrated. The temperature was 102° F. rectally. Her respirations were 32/min., deep and regular. Skin was hot and dry; tongue dry, fissured and coated. There was no smell of acetone on the breath. Her pulse was 140/min. and irregularly irregular. The blood pressure was 140/60 mm. Hg, and a grade II pansystolic murmur was heard all over the precordium, with maximum intensity over the tricuspid area. A few fine crackling rales were heard in both lung bases. Reflexes were hypotonic but present. Plantar responses were equivocal.

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The following laboratory examinations were performed on admission: urinalysis – glucose 2 plus, albumin trace, acetone negative, microscopic normal; blood sugar, 97 mg. %; blood urea nitrogen, 34 mg. %; serum sodium, 123.5 mEq./l.; potassium, 4.4 mEq./l.; chloride, 113.0 mEq./l.; salicylate, 90 mg. %.

It was thought that this patient had a metabolic acidosis due to ingestion of acetylsalicylic acid, complicated by arteriosclerotic heart disease and cardiac failure. Consequently she was treated with intravenous fluids (including sodium bicarbonate and M/6 sodium lactate), and digoxin by the intramuscular route. It was thought wise that she receive penicillin as well, as the possibility of a superimposed basal pneumonia could not be ruled out.

On the morning of December 8, the serum pH was 7.69. The use of M/6 sodium lactate and sodium bicarbonate was immediately discontinued, and treatment was carried on with 5% glucose in saline and in water, sufficient to produce 1500 to 2000 ml. urinary output per 24 hours. With good nursing care, she improved to her normal state within the next few days. Laboratory results are summarized in Table I.

TABLE I.—LABORATORY FINDINGS

	Blood urea nitrogen (m.g.%)	*Serum*					
		Sodium (mEq./l.)	*Potassium (mEq./l.)*	*Chloride (mEq./l.)*	*Bicarbonate (mEq./l.)*	*pH*	*Salicylate (mg.%)*
December 6	34	123.5	4.4	113			90.0
7	74	130.8	3.8	106	10.7		40.0
8 (a.m.)	34	127.7	3.2	98	15.6	7.69	30.7
8 (p.m.)						7.50	23.0
9		141.1	3.7	109	15.4	7.70	20.0
10	20	146.0	3.6	118	16.2	7.67	6.8
12	16	150.2	4.0	122	17.0	7.60	2.3
15							2.25

She progressed well in hospital until the 17th hospital day, at which time she began to cough up yellowish sputum. Her temperature rose to 101° F. The sputum on culture showed a heavy growth of *Staphylococcus pyogenes,* sensitive to chloramphenicol and erythromycin. In spite of treatment with these antibiotics and appropriate supportive therapy, she succumbed to a staphylococcal bronchopneumonia on the 23rd hospital day. Permission for autopsy was refused.

DISCUSSION

Fatal doses of various salicylates are reported by Lucas[8] as: sodium salicylate, 4-12 g. (60-180 grains); acetylsalicylic acid, 30 g. (450 grains); oil of wintergreen (in children), 6 c.c. (1½ drams). The present patient is reported to have taken somewhere between 33 and 67 g. (500-1000 grains) of acetylsalicylic acid, which exceeds the recorded fatal dose; however, she vomited an unknown number of these tablets, so she undoubtedly absorbed a dose closer to the lower level than the upper one.

Farber *et al.*[4] gave 12 g. of acetylsalicylic acid to 10 normal adult men over a period of eight hours and produced symptoms of salicylism in all. The average peak blood salicylate level obtained was 39 mg. % (range 30.1 to 50.3 mg. %), two

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hours after the final dose of the drug and still 30% of the peak value 24 hours after the final dose. In our case, the salicylate level 48 hours after ingestion was 90 mg. %, and detectable amounts (2.25 mg. %) were still present 11 days later.

In conjunction with the preparation of this paper, the serum salicylate level was determined in four patients receiving salicylates on a long-term basis; the results are presented in Table II. The extreme variability and the lack of relation between dosage and blood level are worthy of note, and suggest that further study might well be indicated.

TABLE II.—BLOOD SALICYLATE LEVELS IN PATIENTS RECEIVING LONG-TERM THERAPY WITH ACETYLSALICYLIC ACID

Age	*Disease*	*ASA dosage per day*	*Salicylate levels*
18	Rheumatic fever	50 grains (3.3 g.)	11.6 mg.%
47	Rheumatoid arthritis	80 grains (5.3 g.)	4.1 mg.%
82	Osteoarthritis	40 grains (2.7 g.)	20.0 mg.%
55	Rheumatoid arthritis	60 grains (4.0 g.)	30.2 mg.%

Pathogenesis

The mechanism of the acid-base disturbance has been described by Singer[10] and by Harvie and Singer.[6] The first effect of ingestion or injection of salicylate is hyperventilation. This is thought to be caused by a specific pharmacological action of the drug on the respiratory centre, although the mechanism of this has not been clarified. Hyperventilation results in an increased loss of carbon dioxide with a resultant drop in pCO_2. This results in a decrease of the H_2CO_3:$BHCO_3$ ratio below the normal of 1:20, thus producing a respiratory alkalosis which is compensated by the loss of fixed base (sodium and potassium) by the renal route. In adults and older children the derangement usually does not proceed beyond this point, and returns to normal within three days after the withdrawal of the drug.

In infants and older patients with massive intoxication, however, metabolic acidosis may appear to complicate the picture.[10] The time required for this conversion varies from one to six hours from the onset of symptoms, and is inversely proportional to the amount of drug taken.[3] The preceding loss of both carbon dioxide and fixed base renders the patient more susceptible to changes in pH. There is production of ketone bodies in the liver in excess of tissue utilization and renal excretion, on account of mobilization of fat resulting from failure of carbohydrate metabolism.[9] It is thought that salicylate inhibits oxygenation in the tricarboxylic acid (Krebs) cycle at the stage of conversion of alpha-ketoglutarate to succinate and of succinate to fumarate. This also results in the accumulation of lactic and pyruvic acids, which serves to further aggravate the acidosis. This second phase of the acid-base disturbance in salicylate poisoning is then a *mixed* disturbance, with metabolic acidosis superimposed on respiratory alkalosis. It can be differentiated from the first phase of pure respiratory alkalosis only by determination of the serum pH, as the clinical picture and other laboratory aids are similar, if not identical, in both phases.

Large doses of salicylate first stimulate and then depress the central nervous system,[6] causing most of the alarming features seen in salicylate poisoning; excitement, disorientation, convulsions, stupor, and even respiratory failure may appear.

In the patient under discussion, disorientation and hyperventilation followed by semistupor were first to appear. The metabolic changes did not progress beyond the first phase described above; the pH was alkaline (7.69), and the serum sodium was decreased (123.5 mEq./l.) by compensatory loss of fixed base in the urine. If the second or mixed phase had been reached, the pH value would have been below 7.35, but the remainder of the results of laboratory tests would have been similar.

Treatment

The patient with salicylate poisoning must be treated in hospital. It cannot be overemphasized that the most important single laboratory test is the determination of the serum pH, for only in this way can the pure respiratory alkalosis of the first phase be differentiated from the mixed respiratory alkalosis-metabolic acidosis of the second phase. It is unfortunate that the initial pH value in the present case was obtained comparatively late in the patient's hospital course.

On admission, gastric lavage should be performed to remove any salicylate still in the stomach. At this time also, blood should be taken for serum pH, sodium, and potassium determinations. Intravenous fluids in the form of 5% glucose in saline should be begun to correct dehydration and to provide carbohydrate and sodium ion.[3] Synthetic vitamin K and, perhaps,[9] vitamin C should be administered in liberal amounts. It may be necessary to give oxygen if the poisoning is severe and tissue anoxia is present. If the temperature exceeds 104° F., external cooling in the form of alcohol sponge baths or a hypothermia blanket is indicated. No specific therapy is required for the hyperglycæmia which may appear. Barbiturates, paraldehyde, and morphine are contraindicated because of the associated respiratory depression and because they may potentiate the toxic effects of salicylates.[3]

In the alkalotic phase, no further treatment than that outlined above is necessary. In the mixed phase, opinion is divided. Segar[9] feels that no further specific treatment is required. Kaplan[7] routinely administers 5 ml. of 5% sodium bicarbonate not more frequently than once every 12 hours, and observes that this drug enhances the

rate of renal excretion of salicylate and decreases the severity of metabolic acidosis by providing sodium ion; he notes, however, that this might well aggravate the respiratory alkalosis.

Adams[1] has reported a case of methyl salicylate poisoning in a child successfully treated by exchange transfusion. Of more interest in relation to the older age group is the work of Doolan *et al.*,[2] who treated a 39-year-old man by blood dialysis with the artificial kidney and removed 1300 mg. of salicylic acid before the demise of the patient one hour after the procedure began. Their work demonstrated that salicylate can be removed from the blood more rapidly by the artificial kidney than by the normal kidney, and hence they recommend early dialysis in the treatment of the patient with severe salicylate intoxication.

In the present case, the erroneous initial diagnosis of metabolic acidosis on clinical grounds led to the administration of alkalinizing solutions with no improvement; when these solutions were withdrawn and sufficient fluids administered to produce a diuresis, the patient improved. The failure to obtain a serum pH determination on admission was responsible for this delay in her recovery. It is our feeling that even in the presence of the mixed phase of acid-base disturbance, the administration of sufficient fluid to produce a diuresis will result in the recovery of the patient.

SUMMARY

A case of salicylate intoxication in an 89-year-old white woman is presented and discussed. The initial serum salicylate level was 90 mg. % at the time of admission, and detectable amounts were still present nine days later. Once the serum pH determination of 7.69 was obtained and the use of alkalinizing solutions discontinued, recovery of the patient was obtained by the induction of diuresis with sufficient intravenous fluid.

Salicylate levels were determined on four patients receiving long-term therapy with acetylsalicylic acid; the extreme variability of the results and the lack of correlation with dosage levels indicated the need for further study of this relationship.

I wish to thank Dr. R. M. Lymburner, Chief of Medicine, Hamilton General Hospitals, for his encouragement in the preparation of this paper. Dr. A. R. McNabb very kindly read and criticized the manuscript, and has made many helpful suggestions. The laboratory procedures were performed under the direction of Mr. D. Armstrong.

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Special Article

AN UNUSUAL INTRODUCTION TO PRACTICE*

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IT WAS a beautiful day in October 1921, when the writer stepped off the small coastal steamship *Capilano* to begin a contract practice at the small mining community of Britannia Beach, British Columbia, about 40 miles by boat from the city of Vancouver. It was my first practice, and with my wife and infant son I had visions of a comfortable home and a nice quiet time in this apparently stable little centre of industry. For a stated salary paid by the mining company, the doctor was expected to provide free service to employees. The assured income, plus the fact that a free furnished house and a small well-equipped hospital were also supplied by the company, gave an attractive outlook to one who had just left a hospital internship.

The little company town at sea level was established on a flat area that had been built up partly by the action of a mountain stream which broke through a rocky canyon before rippling over the boulders to the sea, and partly by rock and dirt waste from development of the property as an operating copper mine.

Some 2200 feet up the mountain and about two and a half miles away in a narrow valley, nestled another section of the community where most of the miners lived, the main workings being above this level. The main haulage tunnel or adit entered the mountain here, the mine railroad crossing the stream over a fill before going underground. The mountains reach a height of about 4000 feet and are mostly heavily timbered.

Transportation between the two settlements was by incline railway, operating once daily, or by an overhead bucket line which had once been used for carrying ore but had been superseded by more advanced methods. The bucket line was in operation carrying general freight for several hours daily, and only a few, including the doctor, were privileged to use this method of travel. The mine had been closed down for some months but development work was proceeding with a view to reopening.

As the master mechanic accompanied me to the upper community on my first trip on the bucket line, he cautioned me to duck my head as we came to each supporting tower where the cables passed over pulleys protected by metal guards. His tragic tale of the decapitation of young Dr. Marchant of Victoria, while taking his first trip over this same bucket line, did not fail to impress me. From our lofty height the scenery was

*These experiences were so unusual for a doctor to encounter during his first month of practice that it has seemed worth while recording them as part of our medical history.

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beautiful, but some things are more important than scenery. I ducked my head at each tower.

Up at the mine I was shown a huge trough down the mountain side which had been gouged out by an enormous rock-slide which swept some 56 persons to their death in 1915. But these things were past, and with the lessons learned and precautions being taken, one did not envisage further disasters in the immediate future.

Ten days after my arrival on the scene, however, another disaster did occur. Two men from the Beach community had gone underground in the morning to trip some bunkers and did not return at the end of their shift. They were clearing out a raise which was later found to be blocked at both upper and lower ends, so they were somewhere between the 3400 and the 4100 levels. These figures indicate the distance from the top of the mountain.

Rescue parties were soon formed and men worked feverishly in short shifts, digging and hoisting loose "muck". As soon as one crew became fatigued another fresh one was available for the digging and hoisting during the full 24 hours of each day.

Would the men be found alive? If so, what condition would they be in? Would they likely be badly injured? These were the questions in the minds of everyone but the answers could only be guessed. The doctor at the scene had to prepare for possibilities. Stretchers, first-aid materials, hot-water bottles and a few drugs necessary for such emergencies were collected at a small cabin near the portal which had been a tool house. Transportation difficulties to the place of working made constant attendance at the spot a necessity. For 12 of each 24 hours I stayed at the post waiting and wondering. For the other 12 hours I had a capable and experienced nurse who took the shift while I returned home for food and rest as well as to attend to urgencies of practice among the rest of the population.

At eleven o'clock one night, just over seven days since they disappeared, the men were brought out alive and apparently well, smiling and happy at being rescued. They were in such good condition that they were able to climb about 400 feet of ladder in getting out to the surface. All they needed was a little nourishment and to be taken to their homes.

Their story was that some timbers had given way, allowing tons of muck to pour uncontrolled down the raise until it jammed below them. The blockage continued through the chamber they were in and also above them. On the first rush they had dodged behind a couple of large leaning timbers which fortunately remained intact, forming a little pocket where they were safe and fairly dry. Some water was trickling through and they scooped out a small hollow from which they could drink. Their miner's carbide lamps soon burned out and they lost all track of the time. Hunger did not bother them much. They attempted to eat a little hemlock bark from the timbers which protected them but did not find it palatable.

The day following their rescue was a period of relaxation and provided an opportunity to catch up on tasks that had accumulated during the week. The rain continued to pour as it had for about a week and the placid little creek had now become a roaring torrent. Standing near it one could hear the rumbling of boulders as they were tumbled along by the terrific force of fast-moving water. Residents had begun to feel a little anxious, especially since it was learned that the culvert through the railway fill across the creek 2200 feet higher up had become partially blocked by logs and debris. Behind this the water had formed into a small lake. However, it was being watched constantly, and official word was that if the fill should go, the water probably would not come with destructive force, and it was expected that there would be ample time to warn people anyway.

Late in the afternoon a message came in that a man had been struck by an ore train in the mine and apparently killed. The body was being sent down to me. It was found that he had been killed instantly and there was nothing I could do except assist in carrying the body to the little hospital to await the coroner's inquest.

At 9.30 p.m., I started walking over to visit the men who had been rescued the previous evening. The creek was an angry roaring torrent as I crossed the little wooden bridge, and I had gone less than a hundred yards beyond when I noticed the master mechanic hurrying towards me. As he reached my side he said, "I was just coming to warn you. Something has gone wrong up above, and the water is coming down." Immediately, the whole area was plunged into darkness as the electric wires were torn out by the onrushing water and debris.

My informant turned to run towards his home and I towards mine. The roar and crash of crumbling houses sounded so close that I quickly concluded that there was little chance of survival and decided to stop and face it. Against the dull sky I could see the peak of a house near me and thought that by slim chance I might be able to grab the building on its way to the sea. Suddenly I was struck on the shins by floating logs, fell forward and held on. After carrying me about 40 yards, the logs jammed in a huge pile against a heavy recreation hall and I began to splash my way out.

Some of the houses had remained standing as the flood had split into two main streams. From the door of one house a man emerged with a light, and I was able to see my way to scramble over the wreckage. Shrieks and cries came from all directions. I turned towards the nearest one. It was my friend, the master mechanic, under a mass of house wreckage that was leaning against another building. His right foot had been torn almost off and was entangled with house wires so that I could not free him until two more men arrived to help ease the weight on top of him. We carried him into a house and tore up sheets for bandages. There was little or no hæmorrhage with this avulsion type of injury. I continued rescue work for some time, leaving the victims in the hands of others after giving hurried instructions. Many were found who were beyond help.

Although cold, wet and uncomfortable at first, I was encouraged by the thought that things could

have been worse. The company store was soon thrown open and a pair of rubber boots and dry socks were obtained. A kind-hearted man loaned me his heavy Mackinaw coat and then rescue work was continued in some degree of comfort.

The general manager turned his large residence into an emergency hospital, and all the injured were transferred there as quickly as possible. But I had no supplies, and inquiries revealed that all bridges were washed out and no boat was available with which one might row around to the hospital and obtain materials. A few minutes previously, the manager had dispatched two oarsmen with the only available boat, to get word to Vancouver and ask for a special steamship to evacuate the injured and the homeless. All telephone wires were downed by the storm.

The general store had a few bandages but no iodine or other antiseptic except a few bottles of Listerine. None of the homes had any first-aid supplies. The paternalistic company had been providing free medical service and supplies to the people, so why keep anything in the home?

Needed supplies were tantalizingly close in the little hospital and yet inaccessible. A few brave souls, including a first-aid man, walked down from the upper community, suspecting that a disaster had occurred and that they might be needed, but they brought no supplies with them. A return trip would take three hours or more and was not practical. The bucket line could not operate without electricity, and all power was off. There appeared to be no other course but to go ahead with makeshift materials and get the casualties prepared for their journey on the expected steamship.

With a solution of Listerine, the wounds were cleaned as well as possible. Wherever the skin was broken the exposed tissues were a dirty grey which could not be removed with washing. The flood water must have been of a soupy consistency with the soil and filth it had gathered on its way to the sea. Boxes were broken up to make splints, and bandages from bed sheets were used to bind up the wounds. The first-aid men and the doctor, working by flickering candlelight or by miner's carbide lamps, had the 35 or 40 casualties done up temporarily by about four a.m. There were several fractures and some very bad lacerations, but many of the casualties had only minor bruises and lacerations. Almost all were suffering from some degree of shock.

No sedatives were available and it was rather hard to go through the long hours of moaning and pleading, with nothing but soothing words to offer. There was some comfort in thinking and in telling them that a special boat would be appearing at almost any time. Here again we met with frustrations as the hours went by and no boat appeared. We learned later that the two men who had been sent off in a rowboat to get a message through to Vancouver had to row about 18 miles through the darkness in rough seas before finding a place from which they could telephone. Wires were down at the one intervening point.

It was a long night, and with the dawn we looked out on a sea almost carpeted with driftwood as well as two or three houses floating half submerged. Our village was a mass of wreckage with some wide-open spaces where houses had been washed out. Some of the buildings had been thrust aside and lay at crazy angles where they had been deposited; others had been crushed to pieces and were now merely bits of lumber mingled with the numerous logs that had been brought down by the flood.

After daylight a small rowboat was located across the creek and by this means a message was sent across the inlet to the little town of Woodfibre. Before 10 a.m. their little diesel tugboat arrived, and it was a great relief to see Dr. C. G. G. Maclean step ashore with his doctor's bag. He had a good supply of sedatives, and the patients were turned over to him.

For the first time since parting from them some 12 hours previously, I was able to give some thought to my own family and was greatly relieved to learn that they were safe.

It was about noon when the mail boat arrived from Vancouver, and down the gangplank filed a group of doctors and nurses headed by Dr. Lavell Leeson from the General Hospital. Each one carried something in the way of splints, dressings, bandages or other equipment.

The ship's captain decided to continue his voyage to Squamish. After all, he was under contract to deliver the mail. It was not until 4 p.m. that the vessel sailed for Vancouver with her cargo of injured persons and refugees.

After surveying the casualties, Dr. Leeson concluded that our first-aid treatment was satisfactory for the journey to hospital, so dressings and splints were not disturbed.

The Vancouver General Hospital must have been a very busy place that evening with so many emergency cases thrust upon them, some of whom were in serious condition, although probably not more than about 15 actually needed hospitalization. It was not possible to get detailed information to the hospital ahead of the casualties. However, the hospital staff and attending surgeons must have risen magnificently to the task, for all but one of the patients recovered, even though one of them developed gas gangrene and tetanus, while another amputation case was complicated by gas gangrene. The one man who died had received serious chest injuries when crushed by a piano as the flood toppled his house, and he later developed pneumonia.

The two men who had been rescued from the mine on the previous evening again escaped alive and uninjured although their houses were thrown to one side by the main wave. They began to wonder what was next, as there is a strong superstition among miners that accidents come in groups of three.

In case some reader might wonder, the doctor received no extra compensation for such extraordinary services, except that he was allowed to keep the socks and rubber boots that he had obtained from the store that memorable night.

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SHORT COMMUNICATION

70 mm. SPOT FILM CAMERA*

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EVERY RADIOLOGIST has been faced at one time or other with the different problems raised by the cost of large film storage, handling, processing, picture taking and so forth. With the coming of age of the image intensifier, it has become possible to examine patients by remote control through the help of TV monitoring.

The purpose of this paper is to show the type of permanent record which may be achieved by means of small photofluorographs. In the last few years, reports from Europe have described the results obtained with a robot (35 mm.) camera set up to alternate with the binoculars on a Philips image intensifier. In the U.S.A., Stauffer and his associates have used polaroid film extensively, enabling them to get almost instantaneous records of spot filming.

We started experimenting in the spring of 1958, and by June of that year we had built our first camera, which was extremely simple yet very useful. It was built around four components:

1. A conventional attachment for image intensifier.
2. Tandem lenses of F 1.5.
3. A camera obscura.
4. A magazine for Speed Graphic.

This magazine allowed us to take 12 pictures on any type of 60 mm. film. In six months we took more than 5000 pictures. Although satisfied with our results, we wanted to improve on our device and started searching for an automatic camera which could be cheaply modified for our purpose. We finally selected the Beattie-Coleman made by a California camera firm. This apparatus will accommodate spools of 100 feet of 70 mm. film. Other features include automatic film transport, remote control shutter and film marking device. The only modification required was lengthening the lens cylinder in order to have the necessary extension for close-up work and synchronizing the shutters with our x-ray monitor. Results have been very gratifying and we can selectively spot-film any five-inch field in the human body with the greatest of ease.

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CAMERA AUTOMATIQUE 70 mm.*

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LAURENT HUOT, M.D. et
GERALDUS BAKKER, *Montréal*

TOUS LES RADIOLOGISTES connaissent les problèmes inhérents au film de grand format: entreposage, coût, manutention, développement, exposition etc. Les amplificateurs permettent depuis quelques temps d'examiner les patient à distance au moyen de la télévision. Plusieurs radiologistes ont adapté les amplicateurs de brillance à la photofluorographie instantanée. Depuis quelques années, une camera Robot (35 mm.) est employée alternativement avec les objectifs binoculaires de l'amplificateur de brillance de Philips; différents comptes rendus de son rendement ont été publiés en Europe. Aux Etats-Unis, Stauffer et ses associés ont beaucoup employé le film Polaroid. Cette méthode leur permet de voir immédiatement le résultat de leurs instantanés radiologiques.

Nous avons commencé nos expériences au printemps de l'année 1958 et dès le mois de juin nous avions construit notre première camera qui est extrêmement simple et cependant très utile. Cette camera est composée des quatres pièces suivantes:

(1) Une pièce d'union pour relier la camera à l'amplificateur de brillance;
(2) Des lentilles d'ouverture f. 1.5;
(3) Une chambre noire;
(4) Un magasin d'appareil Speed Graphic.

Le magasin de Speed Graphic nous permet l'usage de films courants de 60 mm. de largeur et nous pouvons ainsi obtenir 12 instantanés par bobine. Nous avons employé cette camera durant six mois et fait plus de 5000 instantanés.

Etant satisfait des résultats, nous nous sommes mis à la recherche d'une camera automatique qui pourrait être modifiée sans coût important et notre choix s'est posé sur le Beattie-Coleman (camera fabriquée en Californie). Cet appareil nous permet l'emploi de 100 pieds de film 70 mm. Le transport automatique de la pellicule est commandé à distance. L'obturateur s'ouvre et se ferme en même temps que commence et se termine l'exposition aux radiations ionisantes; de plus, chaque instantané porte l'heure de l'examen et le nom du patient.

Les seules modifications nécessaires furent l'extension de la chambre noire pour permettre les gros plans ainsi que la synchronisation de l'obturateur avec le contrôle des rayons-X. Les résultats sont très satisfaisants et nous pouvons faire des instantanés de n'importe quelle portion de l'anatomie humaine comprise dans un diamètre de cinq pounces (12.5 cm.).

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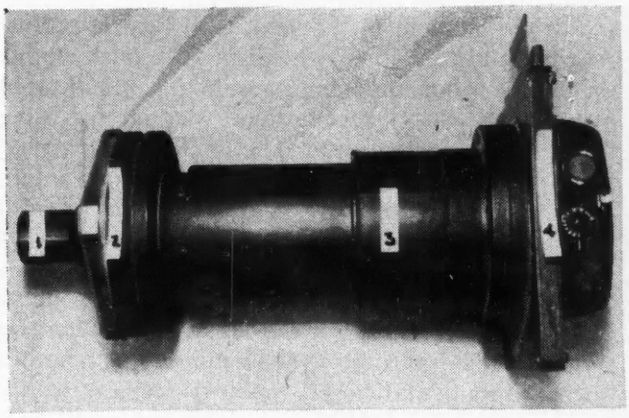


Fig. 1.—Camera No. 1.: (1) lenses, (2) attachment, (3) dark room, (4) Graphic magazine.
(Camera No. 1: (1) lentilles, (2) pièce d'union, (3) chambre noire, (4) magasin Graphic.)

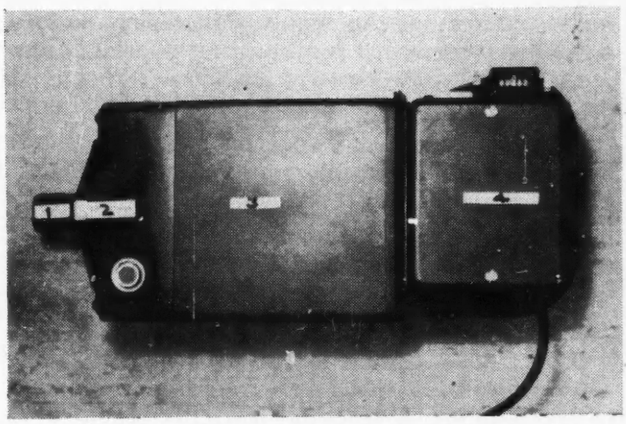


Fig. 2.—Camera No. 2: (1) lenses, (2) attachment, (3) dark room, (4) magazine (100 feet).
(Camera No. 2: (1) lentilles, (2) pièce d'union, (3) chambre noire, (4) magasin (100 pieds).)



Fig. 4(a)



Fig. 4(b)



Fig. 4(c)



Fig. 4(d)

Fig. 4(a).—Filled cæcum. Fig. 4(b).—Evacuated cæcum. Fig. 4(c).—Gallstones with calcified periphery. Fig. 4(d).—Multiple calculi.
(4(a) Cæcum remplissage; 4(b), cæcum vidange; 4(c), calculs biliaires calcifiés en périphérié, 4(d), plurilithiase vésiculaire.)

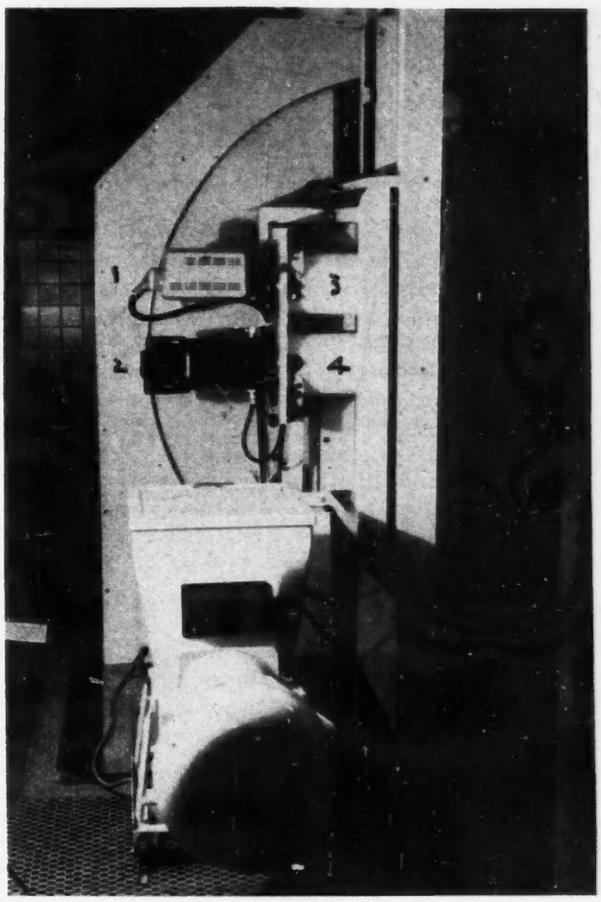


Fig. 3.—Spot film equipment: (1) TV camera, (2) spot film camera, (3) image intensifier, (4) image intensifier. (Equipment specifications, Dr. Albert Jutras.)
(Nécessaire à instantanés: (1) camera de TV, (2) camera à instantanés, (3) amplifacteur de brillance, (4) amplificateur de brillance. (Spécifications de Dr Albert Jutras.)

WHAT KIND OF MAN SHOULD A DOCTOR BE?

The qualities of a good doctor are discussed as follows in the opening paragraphs of a report by a planning committee appointed to advise on the establishment of a medical school to serve Rhodesia and Nyasaland: "On the moral side there were no dissentients from the view that kindness was an essential—perhaps the most essential—inborn quality. Clearly, it must be kept within such bounds as to make sure it does not consume the doctor's own mental energy or spoil his judgment. Pity, in other words, must be his motive and not his guide. But, with that limitation, kindness remains the one quality without which the doctor will never be the 'beloved physician'; and alongside kindness, if his intellectual and moral qualities are properly attuned, courage and honesty will develop. Equipped with these three qualities he should soon acquire a proper humility, and by a proper humility we mean a realization of his limitations linked with a reasonable confidence extending over his area of competence. From a combination of these various qualities will come a sense of responsibility.

"On the intellectual side the young student should be curious, but he must not just wonder why—he must want to find out. Memory will develop from curiosity because it is relatively easy to remember what is interesting, and, on a basis of curiosity and memory, the well-taught student will acquire a knowledge of method. The acquisition of technical knowledge—when allied to the moral qualities by which we set store—will result in professional skill and judgment."

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SPECIALISM UNDER THE MICROSCOPE

Those who of recent years have regarded general practice as the problem area of medicine need to be reminded that specialism is also associated with a host of problems. If anyone thinks that this is not so, he should read the papers given at the 55th Annual Congress on Medical Education and Licensure, reprinted in the May 16 issue of the *Journal of the American Medical Association.*

Some hardy souls among the galaxy of pedagogic stars concerned in the Congress committed themselves pretty deeply on certain controversial points; others, more cautious, entitled their lecture "Why this Conference?" and went on to ask a series of fundamental questions about specialism without attempting to answer them.

Thus, Prior says boldly:

"The so-called generalists are out of fashion if not out of date. Occasionally we do them homage, as though recognizing an impossible ideal for old time's sake. Now and again the medical profession will single out a general practitioner toward the close of an honorable career and give him public honors, but there is something sentimental and nostalgic about this gesture. It is as though there had been introduced the practice of honoring the knight of the year during the late Middle Ages after the invention of gunpowder and firearms."

But, unfortunately, in the same issue of *J. A. M. A.* up pops the dynamic John DeTar and points out that between 40 and 50% of the men graduating from American medical schools between 1940 and 1954 are now in general practice *and that this percentage is rising rather than declining.* In other words, the obsolete horsemen are not all dead yet. And, of course, Prior's military analogy is unfortunate, for those who sit in the seats of the military mighty are no longer specialists at all, whatever they may have been earlier in their careers.

Gross points out that the specialist is not a modern invention, for Egyptian medicine had a multitude of them in the year 1350 B.C. It is true, retorts Galdston, that specialism was most highly developed when medicine was in its infancy, but even in its early stages there was an opposing trend towards integration. The ancient Greek physician was a general practitioner. And, one might add, which civilization contributed the greater sum of original thought, the Greek or the Egyptian?

The speakers, however, agreed, as we all must, that specialism in some form or another is here to stay. The only question in their minds was whether further fragmentation of medical science would take place, or whether, as Galdston suggested, the emergence of unifying principles in biology would lead to fusion of some of the specialties. This may well take place, for it is inconceivable, for example, that the highly skilled and complex procedures currently employed in treating cancer represent the easiest way of dealing with malignant neoplasia.

The disadvantages of specialism were put under the microscope at this meeting. It was noted that it has increased the cost of medical care, and indeed the sheer force of economics may ultimately act to restrain the fragmentation of medicine, through the impossibility of paying all the persons involved in a complicated medical situation.

It has raised grave educational problems. If a man is destined for a very narrow subspecialty, how should he be prepared for it? Should his field of training be narrowed down early or late? Ideally, should he, like the consultants of old, come to his lifework via general practice or should he be preserved uncontaminated from things that do not directly concern his future? It would seem from the Congress reports that great emphasis was laid on combating the disadvantages of specialism by a sufficiently broad training.

Specialism has raised equally serious problems in research. The expert in a narrow field (and modern man can scarcely hope to be truly expert in anything but a narrow field) is unlikely to innovate, says Prior, except by accident. Originality is not stimulated by narrowness, and many problems lie in areas in between the specialties. It is true that this difficulty has to a great extent been overcome by the team approach, but successful teams need a leader. Who are to lead the interdisciplinary teams? Is there a lack of non-playing Casey Stengels in the medical world? And if so, is some of our research bogged down for lack of sufficient men with a holistic view? We cannot tell, but it is a disturbing thought. There is, of course, also the danger, as Tenney pointed out to the Congress, that in order to bridge gaps in our present system we may simply end by unintentionally creating more specialties.

It is clear that there are many problems to be solved in relation to medical specialism, and that the problems will not simply disappear if they are ignored. As McKittrick put it, after acknowledg-

ing the invaluable contributions of specialty boards to research, teaching and medical care:

"The time has come when medicine as a whole and its specialty groups should carefully reevaluate the effects of our newly acquired knowledge on specialization and its relation to the parent disciplines and to our future educational programs."

Editorial Comments

IDIOPATHIC HYPOPROTEINÆMIA

With the help of studies of isotope turnover it has become possible in recent years to separate a group of cases of severe hypoproteinæmia, to which Schwartz and Thomsen[1] applied the term hypercatabolic hypoproteinæmia. Some 40 cases of this interesting condition have been reported so far, and in all of them there was marked hypoalbuminæmia and generalized œdema—often extensive and sometimes even fatal. It was demonstrated as long ago as 1949 (Albright *et al.*)[2] that the basic disorder in these cases was increased loss of protein and not reduced protein synthesis. Gordon[3] followed up the studies of Schwartz and Thomsen and others which proved that in many of these cases a great loss of protein occurred from the gastro-intestinal tract. Using I^{131} labelled polyvinylpyrrolidone (P.V.P.), Gordon developed a method for estimating the amount of plasma protein excreted in the fæces. In nine subjects suffering from "hypercatabolic hypoproteinæmia", the results of this study confirm that the disease, in these cases at least, was due to protein loss into the stomach or intestine. He suggests the term "exudative enteropathy" for this disorder.

Schwartz and Jarnum emphasize that low serum albumin in a patient with high albumin synthesis in whom external loss can be ruled out denotes internal loss of albumin. In all four cases reported by them[4] fæcal excretion following intravenous injection of P.V.P. tagged with radioactive iodine was abnormally great, indicating leakage of this colloid into the gastro-intestinal tract. Two of the patients had hypertrophic gastritis and one of them made an excellent recovery from this hypoproteinæmia three months after gastrectomy. The other two had disease of the small bowel of unknown etiology, and at laparotomy the only abnormal finding was the presence of "peculiar dark granules" similar to hæmofuchsin, in the external muscle layer of the gut. Significantly, complaints were slight or absent in these cases, and the main sign was œdema. In 31 of the reported cases, data regarding investigation for gastro-intestinal disorder were mentioned. In 14 the complaints had been quite severe, usually of diarrhœa, and at least three of these patients had hypertrophic gastritis. The original diagnosis in these cases was of hypoproteinæmia with secondary gastro-intestinal disorder.

In 1945, Golden[5] described the x-ray pattern of the small intestine seen in hypoproteinæmia and ileus resulting from it. It may well be that some of the cases which he observed were due to loss of albumin through the gastro-intestinal tract because of hypertrophic gastritis or some intestinal disorder, and that a vicious circle was then established. On the other hand, one cannot rule out the possibility that hypertrophic gastritis may be secondary to idiopathic hypoproteinæmia. In ulcerative colitis and regional ileitis the protein loss is understandable. Schwartz and Jarnum have also found increased loss of protein from the gastro-intestinal tract in three cases of cancer of the stomach and in one case of sprue. In all of these cases, there was hypercatabolic albumin degradation, and this ties in with the observations of Davies, Ricketts and Bull,[6] who found raised albumin catabolism in patients with great loss of protein following whole-skin loss (burn) and multiple fractures. Their finding that, in cirrhosis of the liver with a low serum albumin, catabolism of both total proteins and of albumin was about half the normal suggests to them that there is some common mechanism which controls the catabolism of proteins in widely differing clinical conditions.

W. GROBIN

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DIFFERENCES IN INCIDENCE OF INTERNAL DISEASE IN THE TWO SEXES

Certain diseases are almost sex-linked, and Franke and his colleagues (*Deutsche med. Wchnschr.*, 84: 653, 1959) undertook a study of the incidence in the two sexes of various common diseases seen in an out-patient clinic. Of the 9437 patients seen in a clinic for internal medicine during the years 1956-1957, there were 4910 men (52%) and 4527 women (48%). A total of 17,829 diagnoses were attached to these patients. When the most frequent diagnoses were tabulated according to sex, it was found that of the 32 diagnoses 26 showed a very marked difference in incidence in the two sexes. Some of these differences are very significant, as for example in the case of carcinoma of the stomach; 8.2 per thousand of women and 14.9 per thousand of men were found to have the disease. Duodenal ulcer had a quotient of 0.31 (female: male) whilst in gall-bladder disease the ratio was 4.14.

The following were predominantly male diseases: angina pectoris, myocardial infarction, bronchitis, bronchiectasis and emphysema, pulmonary tuberculosis, gastroduodenitis, gastric ulcer, duodenal ulcer, carcinoma of the stomach and cirrhosis of the liver. Gall-bladder disease, goitre, hyperthyroidism, tetany, hypochromic anæmia, osteoarthritis and vegetative dystonia were much more frequent in the female population. Many other conditions in which differences in sex incidence were marked were not tabulated because the number of cases in each condition was below 1% of the total. Factors

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which may contribute to an apparent difference in incidence are discussed. The pain threshold may be higher in women and therefore fewer women may consult doctors because of such conditions as gastric ulcer. However, it is known that perforation of peptic ulcer is much less common in women than in men, indicating a true low incidence of peptic ulcer in women. It is likely that men consult out-patient clinics more frequently than women because they need health certificates for absence from work. The difference in incidence of hypochromic anæmia might in part be due to the greater physiological variation in hæmoglobin values in women.

It must be remembered that there are significant physiological differences between the sexes. Women are smaller and have a smaller body surface and lessened caloric requirement per surface unit than men. It has been estimated that woman's fat content is 28% of body weight as against 18% in man. In addition, it is known since 1949 that every cell in the body contains the characteristics of its sex, and the likelihood must be accepted that the cells of the two sexes react differently to environmental stimuli. Although hypertension is commoner in women, its course is more malignant in men, in spite of the fact that in older women higher blood pressures and higher blood lipid levels are found. As regards the well-documented higher incidence of carcinoma of the lung in the male, it is well to remember that all the other pulmonary diseases such as bronchitis are also by far more common in the male. In some diseases the responsibility of certain external factors such as exposure to noxious agents is obvious. Pneumonoconiosis is almost entirely a disease of the male, whilst psittacosis is almost always encountered in females, who are much more frequently involved in looking after birds. Further study of the causes of the sex-linked differences in morbidity would be of value. Better understanding of these special causes should help materially in the investigation of pathogenesis of internal diseases. W.G.

TEACHING TECHNIQUES IN MEDICINE

As on many basic issues in medicine, reliable data are lacking on the relative effectiveness of different methods of teaching medical students. Many are opposed to the traditional methods of passive absorption of knowledge through lectures and demonstrations, and advocate their replacement by practical classes and free discussion groups. Indeed, according to the more revolutionary element, discussions should not be hampered by the presence of a teacher, in order not to inhibit participation by members of the group. This presupposes that to open one's mouth is to increase one's knowledge, a point of view with which many will disagree. This dissenting element of course is aware of the disastrous fallacy which has bedevilled education in some countries of recent years, mainly that a group of intelligent people, if given a problem, must by free discussion come up with a solution. Unfortunately, experience teaches that knowledge as well as intelligence is necessary.

At The London Hospital Medical College in England (*Lancet*, 1: 568, 1959), some pharmacology teachers have been trying to assess the relative effectiveness of different methods of teaching. They arranged a course on the pharmacology of the peripheral nervous system for 62 students in the third term of their first pre-clinical year. They began with four basic lectures and then allotted their students to four groups with similar proportions of students of different ability. The four groups then separated off and divided up their time as follows: (1) demonstrations and discussion groups without a teacher, but with tape-recordings of suggestions for procedure and leads to discussion of the subjects involved; (2) practical classes and discussions; (3) demonstrations and seminars; (4) practical classes and seminars. At the end of the course all groups were submitted to tests, consisting of a prose test and also multiple-choice questions. Students were also asked to record in detail how they spent their working hours—reading textbooks, writing up notes, and so on. The value of the course was assessed by the gain in knowledge, by the time required to achieve similar ends in different ways, and by the views and attitudes of the students.

From the first point of view, the experiment was disappointing because the mean improvement of all students taught by each of the methods was approximately the same. This of course suggests a further source of error in the experiment, namely that all the important knowledge was assimilated by the students as a result of the four introductory lectures.

The second method of assessment revealed a partial conflict between the interests of the students and the teachers. There was no significant difference between the four groups as regards the distribution of their working time, though it is curious to note that the number of hours spent on private study did not correlate with the score in the final test, or with the improvement in score during the course. From the teacher's point of view, demonstrations are at least 20% more economical of time than practical classes, while discussions are much more economical than seminars.

Students were asked to state how useful and how enjoyable the methods of teaching were. Lectures were considered by all groups to be by far the most useful teaching method, and by three out of four to be the most enjoyable. Demonstrations were also much more popular than practical classes, and indeed the authors suggest that the practical class in pharmacology may well give way to a more pleasant and effective method of using the time. As regards usefulness, discussions were very badly rated, but they were found to be more enjoyable than reading. There seems little doubt in the students' minds that the advantages of discussion groups over seminars outweigh the disadvantages.

Obviously, small-scale experiments like this are only scratching the surface, and it is to be hoped that this scratching is only a prelude to deeper digging in virgin soil.

Medical News in brief

THE PUDDLE SIGN IN DIAGNOSIS OF MINIMAL ASCITES

The puddle sign for ascites is elicited by having the patient lie in the prone position for five minutes and then assume a position on "all fours". One flank is percussed by repeated light flicking at a constant intensity and the stethoscope fitted with a Bowles-type headpiece is placed over the most dependent portion of the abdomen and gradually moved toward the flank opposite the percussion site. A positive sign consists of a marked increase in intensity and character of the percussion note as the stethoscope is moved towards the opposite flank. In order to test the accuracy of this sign, Lawson and Weissbein (*New England J. Med.*, 260: 652, 1959) injected 24 dogs intraperitoneally with 0 to 120 ml. of saline solution. The authors then examined the dogs for the puddle sign, and one observer, who used intensity and clarity of sounds as his criteria, made the correct diagnosis in 21 of 24 dogs. In other tests they were able to differentiate by this sign between intraperitoneal fluid and fluid in the bowel. The puddle sign depends on the differential transmission of vibrations as influenced by interfaces between dissimilar transmitting media. Examinations such as that for shifting dullness depend on local sound absorption over the area percussed. The physical principles in this test are briefly discussed.

SUPPOSITORY TREATMENT OF HÆMORRHAGIC PROCTITIS

In 1957, Truelove (*Brit. M. J.*, 1: 955, 1959) used hydrocortisone suppositories to treat a case of post-irradiation proctitis and found them very effective. Since then he has extended this treatment to patients with ulcerative colitis and proctitis. Recently he has used a suppository containing prednisolone 21-phosphate, which is also highly soluble in water, and found the results to be very encouraging. Of 22 patients reported in this paper, 14 obtained rapid and symptomatic relief, with notable improvement in the sigmoidoscopic appearance of their lesions. The ideal case for the use of suppositories is one in which it is possible to get above the inflamed area on sigmoidoscopy. If there is no clear-cut satisfactory response in a fortnight, this method of treatment should be abandoned. However, for those who respond, this treatment is easy to apply and carries no appreciable risk of any side effects. The author stresses the need for precise diagnosis before using this treatment.

FATTY LIVER AND CIRRHOSIS IN PANCREATIC FIBROSIS

Recent reports indicate a relationship between chronic pancreatic disease and fatty liver or cirrhosis of the liver. A study of 1000 consecutive autopsies at Saint Luke's Hospital, Cleveland, Ohio, uncovered 234 cases of fibrosis of the pancreas. Among these cases, which occurred most frequently during the fifth and sixth decades of life, only 13% had diabetes mellitus. Eighty-seven had associated disease of the biliary tract and many had a history of alcoholism. Fatty liver alone or fatty liver and/or cirrhosis was found in 66.6% of all cases of fibrosis of the pancreas. In the entire group of 1000 autopsies there were 222 patients with liver involvement, and of them 156 (70.3%) also showed pancreatic fibrosis.

Woldman, Fishman and Segal in this report (*J. A. M. A.*, 169: 1281, 1959) point to studies on the Bantu and undernourished people in prison camps in World War II as evidence that nutritional factors alone cannot be held responsible for the frequency of liver disease. They believe that pancreatic insufficiency is an important factor in the development of fatty liver and cirrhosis. In chronic alcoholism, cirrhosis of the pancreas occurs very frequently, and alcoholic cirrhosis is probably not the result of the deficiency in dietary protein but rather the result of pancreatic insufficiency plus the low intake of dietary protein.

CRYSTALLINE PANCREATIC DESOXYRIBONUCLEASE IN TREATMENT OF PNEUMOCOCCAL MENINGITIS

In pneumococcal meningitis "adequately treated" with large doses of intravenous and intramuscular penicillin, mortality figures for 800 cases pooled from 14 clinics averaged 28%. In an attempt to improve this very high mortality, Johnson and his colleagues (*New England J. Med.*, 260: 893, 1959) added pancreatic desoxyribonuclease to the penicillin. The primary aim of this therapy in purulent meningitis is a liquefaction of the exudate on the meninges to enable the penicillin to attack the viable bacteria. Twenty-five patients received this combined treatment during the period of observation and three of them died. This is compared with 24 deaths out of 64 patients who had been treated in the same hospital without the addition of enzyme. Biochemical studies on the cerebrospinal fluids showed that the pancreatic desoxyribonuclease was present in the fluid, and that there was a striking decrease in desoxyribonuclease protein in response to therapy with enzyme. No local or systemic toxicity to crystalline pancreatic desoxyribonuclease was observed.

CLINICAL FEATURES OF INFECTION WITH HÆMADSORPTION VIRUSES

Two new myxoviruses, hæmadsorption viruses Types 1 and 2, were isolated from throats of children in 1957, and subsequently proved to be of etiological significance in pædiatric respiratory tract disease. The clinical findings in 92 patients found to have one or the other of these virus infections are described by Parrott *et al.* (*New England J. Med.*, 260: 731, 1959). The authors point out that rhinorrhœa, cough and sore throat were the major symptoms. Respiratory distress or "croupy" cough was observed in the most severely ill patients. Except for redness of the throat and rhinitis in the mild cases and dyspnœa and rhonchi and rales in the more severely ill, no unusual features were observed. No features typical of this particular infection were found, and the aid of the virus laboratory is necessary to make the diagnosis.

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PYREXIA OF UNKNOWN ORIGIN

Continuous fever of more than two weeks' duration or other prolonged febrile states in which repeated interrogations and investigations, even of the most thorough kind, fail to yield the diagnosis is not uncommon. In recent years, there have been many advocates of exploratory laparotomy as an aid in diagnosis, and organic disease has been discovered in a certain percentage of such cases. A report of 70 cases has recently been published by Geraci, Weed and Nichols of the Mayo Clinic (*J. A. M. A.*, 169: 1306, 1959). All these patients had been thoroughly investigated, and in some cases had undergone therapeutic trials of antibiotic or chemotherapeutic agents. In addition to routine cultures for common micro-organisms there were also bacteriological investigations for Leishmania and Trypanosoma as well as Toxoplasma. In 40 patients there were some abdominal complaints or objective findings in the abdomen but these were absent in the other 30. It is of interest that neither the complaints nor the findings were of diagnostic value.

After exploration the diagnosis was as follows: malignant disease, 21 patients; specific infection, 15; indeterminate disease, 14; entirely negative findings, 14; miscellaneous diagnosis, 6. Of the 14 patients with entirely negative results on exploration, six had signs or symptoms referable to the abdomen.

These data indicate that in some 80% of patients with obscure fever something will be found at exploration and that in 60% the precise diagnosis will be possible. The authors thus make a very good case for exploratory laparotomy in fever of obscure origin. This does not mean that slight elevation of temperature in the absence of any other evidence of disease should be followed by abdominal exploration. Continuing loss of weight, high sedimentation rate, anæmia or other signs of debility in addition to a fever may well warrant exploratory laparotomy and may yield a valuable diagnostic clue or actually provide a diagnosis.

THERAPY OF HYPERTENSION WITH ORALLY GIVEN SYROSINGOPINE

Syrosingopine or carbethoxysyringoyl methylreserpate is one of the most recently produced derivatives of reserpine. Over the past nine months it was administered orally by Herrmann and his colleagues (*J. A. M. A.*, 169: 1609, 1959) to 77 ambulant patients with essential hypertension; doses were divided into 2 to 4 daily. Of the 38 patients who had been on no antihypertensive treatment before, 16 (42%) showed a significant clinical response. Thirty-four patients who had been maintained on reserpine therapy alone for periods of 1 to 12 months required somewhat larger doses of syrosingopine to maintain the same lowering of blood pressure. Five patients who were intolerant to other rauwolfia products and who were unable to continue antihypertensive therapy because of intolerance to other drugs were given 3 mg. per day of syrosingopine with an effective antihypertensive action and without significant side effects. In general, it can be said that syrosingopine is an effective agent in reducing hypertension and that severe side effects are infrequent as compared with other rauwolfia preparations.

(Continued on advertising page 48)

PENSIONS FOR DOCTORS' EMPLOYEES PROVIDED BY THE CANADIAN NURSES' ASSOCIATION

The Canadian Nurses' Association has instituted a pension arrangement which will allow most doctors to set up an employer-employee pension arrangement for their employees.

The primary requirement is that at least one employee be a member of the Canadian Nurses' Association. *All employees* of an employer who employs one or more members of the Association may participate in the plan.

Employee participation in a pension plan is a valuable employee benefit. This plan provides many advantages not otherwise available to individual employees.

Advantages

1. Under the C.N.A. Plan, each participating employer shares in the resulting economies by obtaining better premium rates than can be offered to employers individually.
2. There is no minimum requirement as to numbers of employees. A doctor with ONE employee may participate provided that the employee is a member of the Canadian Nurses' Association.
3. Employers and employees share in the contributions made to the Plan. The employer's contributions are apportioned to the Insured Annuity Fund. Employee's contributions may be apportioned in whole or in part to either the Insured Annuity Fund or the Common Stock Fund, at the employee's discretion.
4. Employees who are members of the C.N.A. may retain participation after termination of employment.

Conditions of the Plan

1. *Eligibility.*—The C.N.A. Plan is flexible as to eligibility so that the employer may establish any reasonable waiting period. All full-time employees may be included. Generally, temporary or part-time employees will be excluded.
2. *Vesting.*—Two alternate methods of vesting are provided. Vesting must be completed within 15 years. Vesting will be contingent on the terminating employee leaving her contributions in the plan to purchase a reduced paid-up pension, otherwise an employee would only be entitled to the return of her own contributions.

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(Continued from page 994)

Information

Employers who wish to participate in the Plan on behalf of their employees should complete the attached "Request for Information" and forward it to the Canadian Nurses' Association, 270 Laurier Avenue West, Ottawa, Ontario.

NEW DRUGS

This listing of new products is based on information received from Dean F. N. Hughes, Faculty of Pharmacy, University of Toronto, and the *Canadian Pharmaceutical Journal*, to whom we owe thanks.

ANTICHOLINERGICS

Oxyphencyclimine (DARICON, Pfizer)

Description. – Oxyphencyclimine (1-methyl-1, 4, 5, 6-tetrahydro-2-pyrimidylmethyl a-cyclohexyl-a-phenylglycolate) hydrochloride, 10 mg. tablets, anticholinergic compound, possessing high therapeutic activity and a prolonged action.

Indications.—Treatment of such conditions as: peptic ulcer; spastic colon, chronic nonspecific ulcerative colitis; biliary tract disease; pylorospasm, cardiospasm; duodenitis; bladder spasm with or without cystitis; ureteral spasm as with stones or pyelonephritis.

Administration.—Usual adult dose is 10 mg. twice daily, in the morning, and at night before retiring. Dose should be adjusted in relation to therapeutic response and side effects. Clinical trials in progress in various pædiatric indications suggest that 0.2 mg./kg. per dose is well tolerated and effective in this age group.

How supplied.—100.

Oxyphencyclimine hydrochloride (DARITRAX, Pfizer)

Description.—Daritrax (oxyphencyclimine hydrochloride) combined with Atarax (hydroxyzine hydrochloride), anticholinergic/tranquillizer compound, 10 mg. tablets.

Indications.—Treatment of such conditions (especially where tension and apprenhension are factors) as: peptic ulcer; spastic colon; chronic nonspecific ulcerative colitis; biliary tract disease; pylorospasm; cardiospasm; gastritis; duodenitis; bladder spasm with or without cystitis; ureteral spasm as with stones or pyelonephritis.

Administration.—Usual adult dose is 10 mg. twice daily, in the morning and at night before retiring. Dose should be adjusted in relation to therapeutic response and side effects.

Valethamate Bromide (MUREL, Ayerst)

Description.—Valethamate bromide 10 mg. tablets; spasmolytic compound providing anticholinergic, musculotropic and ganglionic blocking action.

Indications.—Gastro-intestinal, genito-urinary and biliary tract spasm; adjunctive therapy in peptic ulcer.

Administration.—For acute, severe spasm, 10 to 20 mg. (1 to 2 c.c.) intravenously or intramuscularly every 4 to 6 hours up to 60 mg. in 24 hours. For mild to moderate or chronic cases, and for maintenance 1 or 2 tablets 4 times daily.

How supplied.—Injectable, 10 mg. per c.c., 5 c.c. vials.

Tablets.—10 mg., bottles of 100 and 1000.

MUREL with Phenobarbital, Tablets, (Pr)

Valethamate bromide 10 mg., phenobarbital 15 mg., bottles of 100 and 1000.

NACTON (Bencard)

Description.—Each scored tablet contains 2 mg. of (1-methyl-2-pyrrolidyl) methyl benzilate methyl methosulfate (Compound 1.S.499), selective inhibitor of gastic acid secretion.

Indications.—Peptic ulcer, gastric hyperacidity.

Administration.—One or 2 tablets (2 to 4 mg.) 3 times a day, and at bedtime.

How supplied.—100.

OPHTHALMIC PREPARATIONS

Fluorescein (FLUOR 1 STRIP, Dohow)

Description. – Sterile fluorescein applicator containing sufficient fluorescein sodium on a strip of lint-free paper to stain the eye to delineate corneal injuries.

How supplied.—Package of 200.

Methylcellulose (METHISOL, Dohow)

Description.—Ophthalmic solution methylcellulose 4000 cps N.F. 0.5%.

Indications.—As a tear replacement in dry eyes, e.g., senile keratoconjunctivitis sicca, Bell's palsy, Sjögren's syndrome; to prevent corneal ulcers due to foreign bodies not flushed out because of lack of tears.

How supplied.—15 c.c. sterile containers.

Pilocarpine (ALMOCARPINE Solutions, Dohow)

Description.—Sterile ophthalmic solutions of pilocarpine HCl in five strengths: 0.5%, 1%, 2%, 3%, 4%.

Indications: – Treatment of most types of glaucoma; strabismus; antidote for mydriatic and cycloplegic drugs.

Administration.—Adjusted to individual requirements by the ophthalmologist.

How supplied.—Each potency, 15 c.c. Steri-Tainer.

Zinc sulfate (VAS 1 ZINC, Dohow)

Description.—Sterile ophthalmic solution: zinc sulfate 0.25%, phenylephrine HCl 0.125% in acid buffered vehicle with methylcellulose. Chlorbutanol preservative 0.5%.

Indications.—Chronic and acute conjunctivitis and other mild ocular infections; as a prophylactic after removal of foreign bodies; astringent and decongestant in minor irritations from wind, sun, etc.

Administration.—One drop in eyes 3 to 4 times daily, or more frequently if required.

How supplied.—15 c.c. Steri-Tainer (plastic with drop control).

Zinc sulfate (ZINC 1 SOL, Dohow)

Description.—Sterile buffered ophthalmic solution of zinc sulfate 0.125%.

Indications.—For astringent effect to relieve minor eye irritations.

Administration.—One drop in eyes 3 or 4 times daily or more often if required.

How supplied.—15 c.c. Steri-Tainer.

SEDATIVES, HYPNOTICS, TRANQUILLIZERS AND ANTIEMETICS

Dihydrocodeine (RAPACODIN (N), Knoll)

Description.—Dihydrocodeine, rapidly acting opiate analgesic, 30 mg. usually equivalent to about 10 mg. morphine without its undesirable side actions.

Indications.—Acute and chronic pain.

Administration.—1 c.c. (30 mg.) subcutaneously every 4 hours.

How supplied.—Ampoules 30 mg. 1 c.c., 100's; 20 c.c. multiple dose vial 30 mg. per c.c.

Dihydrocodeine (RAPADYNE (N), Knoll)

Description.—Tablets containing: Rapacodin (dihydrocodeine) 20 mg. with acetylsalicylic acid, phenacetin and caffeine.

Indications.—For relief of pain.

Administration.—One every 3 or 4 hours if necessary.

How supplied.—100.

Pentaerythritol tetranitrate (PENTRAX, Pfizer)

Description.—Pentrax 10—Yellow tablets: PETN (pentaerythritol tetranitrate) 10 mg., Atarax (hydroxyzine) 10 mg.

Pentrax 20—Pink tablets: PETN 20 mg., Atarax 10 mg.

Indications.—For preventive management of angina pectoris, coronary insufficiency, and coronary artery disease, particularly when aggravated by tension or anxiety.

Contraindications.—Should be used cautiously in glaucoma.

Administration.—Should be taken before meals and on a continuous dosage schedule. It does not take the place of nitroglycerin in treatment of the acute attack. Begin therapy with 1 to 2 yellow tablets 3 to 4 times daily. This may be increased for maximal effect by changing to pink tablets.

How supplied.—Each strength, bottles of 100.

EMPIRIN products—changes in name (B. W. & Co.)

'EMPIRIN' now denotes the product formerly known as 'Tabloid' 'Empirin' Compound. Full title is: 'EMPIRIN' brand Tablets of Acetylsalicylic Acid Compound B. P. C.

MISCELLANEOUS

1-Arginine and 1-glutamate (MODUMATE, Abbott)

Description.—Each c.c. contains: Modumate (1-arginine l-glutamate) 250 mg. in Water for Injection U.S.P. with sodium metabisulphite 0.5% as preservative.

Indications.— In treatment of ammonia intoxication due to hepatic failure; not for management of hepatic disorders in which blood levels of ammonia are relatively normal.

Administration.—By intravenous infusion of a solution of 100 c.c. Modumate in 500 or 1000 c.c. of 5% or 10% dextrose over a period of 1 to 2 hours. Suggested that 25 to 50 g. be given as initial dose, repeated after 8 hours if blood ammonia levels are still high or if coma persists. Severe cases may require repeated infusions over 3 to 5 days.

How supplied.—100 c.c.

Phenformin (DBI, U.S. Vitamin)

Description.—Each white scored tablet provides 25 mg. of DBI, brand of phenformin (N_1-β-phenethylbiguanide HCl), oral hypoglycæmic compound, different in chemical structure and mode of action from the sulfonylureas; appears to have a wider range of clinical usefulness.

Indications.—To lower elevated blood sugar and eliminate glycosuria in diabetes mellitus; has been found effective in mild, moderate and severe cases, including brittle diabetes in juveniles and adults, and in some cases after failure with sulfonylureas.

Toxic effects not seen so far. Side effects chiefly intestinal, especially on dosages exceeding 150 mg. a day; readily reversible on dosage reduction or withdrawal.

Administration.—Orally: Dosage must be individualized. Start with low dose initially, usually 25 mg. twice daily with meals, with gradual daily increase of 25 mg. every 3 or 4 days. A daily dose of 150 mg. appears to be the practical maximum. Simultaneously with increase of DBI dosage, insulin dosage is gradually decreased. Detailed literature is available.

How supplied.—100.

REVIEW ARTICLE

VACCINATION AGAINST POLIOMYELITIS WITH ATTENUATED LIVE VIRUS*

D. R. E. MACLEOD, M.D., *Toronto*

DURING the past few years in which the Salk-type poliomyelitis vaccine has progressed through successive stages of early development, trial and widespread use, intensive studies on live virus vaccines by Dr. A. B. Sabin and by Dr. H. Koprowski have independently been proceeding through the first two of these phases. Despite the considerable success of inactivated vaccine, living attenuated virus still has a strong appeal, owing to the deep-rooted belief in the minds of many of those concerned with prevention of virus infection that a live virus vaccine will give better protection than a killed virus vaccine. Indeed until evidence for the value of Salk-type vaccine accumulated, it was widely held that only the living type could give dependable protection, since the two notably successful vaccines against virus diseases—smallpox and yellow fever vaccines—are living viruses. It has seemed logical[1, 2] to attempt to reproduce the immunity of natural infection by means of avirulent virus, and thereby gain the long-lasting immunity which appears to follows poliovirus infection.[3]

The durability of the protection conferred by killed poliomyelitis vaccine has been questioned. Insufficient time has yet elapsed for this to be fully measured, but there is no evidence yet to indicate that the loss of immunity is more rapid than after inoculation of other antigens such as diphtheria toxoid, or that it will present greater problems in maintenance of protection. It is well to remember that this property of the immune mechanism varies greatly, as does the level of measurable antibody and, probably in close relation to the latter, from one individual to another. Immunity following smallpox vaccination may in some persons be short-lived, as evidenced by a primary take one year after successful vaccination.

It has been reported by Fox[4-6] and by Lipson[7] that in persons immunized with Salk vaccine alimentary infection is acquired as readily and persists as long as in non-immunes, in contrast to the reduced excretion of poliovirus in those with antibody from previous infection. On the basis of these and related observations, Fox has predicted that the use of inactivated vaccine will not reduce the natural spread of poliovirus. However, the nature of the alimentary immunity is not understood, and other unknown or unsuspected factors may change the balance between virus and host. Only continued observations over several

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years will establish whether or not the widespread use of inactivated vaccine will reduce the dissemination of polioviruses.

Other advantages of a practical nature put forward for live virus vaccine are economy of production and the relative ease of administering an oral dose. The important questions to be considered are the immunizing power and the safety of these attenuated strains. These questions will be discussed in the following brief review of their development.

In 1950, Koprowski[8] first fed an attenuated type 2 virus to 20 human subjects. This strain, called the TN virus, had been developed by passage through mice and cotton rats which resulted in greatly reduced virulence for monkeys. It also lost the capacity to produce cytopathogenic degeneration of monkey kidney tissue culture cells. No illness occurred in any of the subjects. Most excreted virus, and all without previous immunity to type 2 virus developed antibody. The excreted virus showed no increase in virulence on intracerebral inoculation of monkeys. Two years later Koprowski fed an attenuated type 1 virus, the SM strain, to humans.[9] This strain,[10] after passage through mice and tissue culture, lost virulence for monkeys to the extent that intracerebral inoculation of undiluted material caused no paralysis. Only intraspinal inoculation, the most sensitive route, produced paralysis in a proportion of the monkeys. Alimentary infection was established followed by antibody development in all subjects. No clinical illness was observed.

By 1956 Koprowski[11-16] was able to report that some 500 persons, including infants, children and adults, had been fed one or other of these two viruses, singly or in combination, without adverse effects, thus confirming the early observations. Though only a minority of subjects fed TN virus excreted detectable amounts, almost all reacted by forming antibody. He found that the levels had not declined appreciably when tested after three years. The SM virus became established in all subjects, though refeeding was required in some infants; excretion persisted usually for three to six weeks, occasionally much longer, even up to 23 weeks. Neither maternal antibody nor human gamma globulin prevented infection. When both TN and SM viruses were fed at the same time, the type 2 strain was suppressed in some subjects, but with an interval of three weeks between feeding of each type, there was no interference. No increase in the virulence of excreted virus was observed. Some spread of SM virus to contacts was found, but as the subjects in this trial were mentally retarded children in an institution, conditions were considered unusually favourable to spread.

Dick and Dane[17-20] have reported on trials they carried out in Belfast with both TN and SM strains. Some of their findings were at variance with Koprowski's. They stated that "TN *vaccine* virus was found to be non-cytopathogenic in monkey-kidney tissue culture and to produce no paralysis when inoculated into monkeys by the intracerebral route. Excreted TN *fæcal* virus was found to be cytopathogenic and to cause severe paralysis when inoculated intracerebrally into monkeys." Some increase in virulence of the SM strain was found after human passage. Spread of virus to one of two child contacts was observed in a family living under normal conditions. There was no evidence of spread beyond the family unit, and no case of poliomyelitis was notified in Belfast during the period of the trial or for four months afterwards. Antibody levels were found to decline at a rate similar to that after Salk vaccine.

Considering the TN and SM vaccines to be probably inhomogeneous, Koprowski[21, 22] made further passages of the SM virus, selecting the progeny of single virus particles by the plaque technique and testing by intracerebral and intraspinal inoculation of monkeys. A strain thus "purified" was fed to infants by da Silva.[23] This group of infants was also given type 3 virus, the Fox strain,[21, 22] a similarly "purified" strain originally derived as a virus of low virulence isolated from an asymptomatic child, and also a type 2 virus, the M.E.F.1[24] strain attenuated by adaptation to chick embryo. The type 1 virus recovered from the stools of the vaccinated infants showed evidence of increased neurotropism, but there was no further increase in virus isolated from contacts. No change in the excreted type 3 virus was found. Both of these viruses spread within families, some two-thirds of siblings becoming infected. There were no reported contact cases of poliomyelitis.

Another subline of the SM virus was derived[21, 22] by serial passages in humans followed by plaque selection. Koprowski found no increase in virulence in this series, or in a second series of six serial human passages of this highly attenuated virus, called the CHAT strain. It required larger doses than the SM strain to infect infants regularly. The CHAT and Fox strains have been used in more recent trials in the U.S.A. and in a large trial involving over 240,000 persons in the Belgian Congo, as well as in other countries. In a preliminary report[25] on this trial in Africa, it was noted that in epidemic areas no cases of poliomyelitis were reported after use of the vaccines.

Dr. A. B. Sabin, whose investigations have covered many aspects of poliomyelitis in humans and in experimental animals, developed attenuated strains of all three types of poliovirus by passages in monkey tissue culture.[26] Using various routes of inoculation in monkeys and chimpanzees, he tested the progeny of numerous subcultures,[27] providing many examples of the tremendous capacity of polioviruses to vary in pathogenic properties after cultivation *in vitro*, but finding no strain devoid of activity when inoculated into monkeys intraspinally, the route which he had shown to be the most sensitive.

Among his findings,[1, 28-34] the following are of particular importance. Attenuated strains of all three types of poliovirus, lacking paralytogenic power on intracerebral inoculation into monkeys, could multiply in the throat and intestinal tract in chimpanzees and humans without any ill effects. A dose of about 100,000 tissue culture units was sufficient to establish infection in the intestinal tract of human adults, but did not multiply in the throat. Excretion of virus usually continued for four to six weeks, with extremes of 10 days to 140 days. The multiplication of the laboratory-modified viruses in the intestinal tract was followed not only by antibody formation, but also by resistance to reinfection of the intestine, similar to that following natural infection. Alimentary immunity was not produced by inactivated vaccine, or by live vaccine injected intramuscularly unless virus reached the intestinal tract and multiplied there.

In conjunction with observations by Dulbecco,[35] Sabin showed that propagation of poliovirus in an acid medium (low bicarbonate reserve) could favour the more neurotropic mutants, while in an alkaline medium (high bicarbonate reserve) this tendency would not be present.

In the very first tests in chimpanzees and human volunteers, Sabin found that, after feeding partially attenuated strains, the virus excreted in the stools was more neurotropic for monkeys than that which was fed. He then studied the neurotropism of various poliovirus strains, before and after passage through the human intestinal tract, and selected a strain of each of the three types which appeared to have the least neurotropism and the greatest stability. He found that strains of low virulence, similar to the laboratory-developed variants, could be isolated from healthy children with no recent contact with a case of poliomyelitis. The type 1 strain he chose was the LSc strain attenuated by Li and Schaeffer[36] by passages in monkey tissue culture and monkey skin *in vivo*. The type 2 strain chosen, designated P712, was one isolated by Fox from a healthy child, and the type 3 was the Leon strain, which he had modified by tissue culture passages. He selected sublines of each of these strains by testing the virulence of subcultures obtained from single progeny by the plaque technique. These three "purified" strains, designated as the LSc,2ab, and the P712,Ch,2ab and the Leon, $12a_1b$ strains respectively, have been used for various tests and trials. Virus excreted by humans fed these strains exhibited a slight increase in neurotropism in some individuals, but was still highly attenuated and less neurotropic than strains isolated from healthy carriers.

Clarke *et al.*[37] reported a small trial in which they fed the type 3, Leon 12, a_1b strain to 14 children previously given two doses of inactivated vaccine. Virus was isolated from the stools of five children. The excreted virus showed an increase in neurotropism which appeared to be greater than that observed by Sabin.

In a recent review Sabin[40] has questioned the significance of their findings, on the grounds that their technique of intracerebral inoculation of monkeys (0.5 ml. into each thalamic region, as is done in the safety testing of inactivated vaccine) is highly traumatic and not suitable for the accurate measurement of "cerebral" neurotropism, and also that the medium used for culturing virus from the stools was a poorly buffered serum-containing medium, which would favour the multiplication of more neurotropic virus, giving results which might not be representative of the virus in the stool iself. He did not consider the increase in neurotropism to be significantly greater than that observed in his own trials, in which he found that such increases in virulence were not related to period of virus excretion and did not progress in passage from one person to another. Similar findings have been reported by Verlinde *et al.*[41] in the Netherlands, also by Smorodintseff in the U.S.S.R., as quoted by Sabin.[40]

In addition to the various tests reported by Sabin involving some 169 persons including adults, children and infants, and the studies in the Netherlands and the U.S.S.R., more than 3500 children in Mexico have been fed the three types of virus, and three large-scale field trials are now in progress. Some 200,000 children in Malaya have been given the type 2 virus in the presence of a type 1 epidemic, 143,000 children in Czechoslovakia previously inoculated with inactivated vaccine have been fed all three types of virus, and a trial involving more than 200,000 children has been started in the U.S.S.R. No significant illnesses attributable to the live virus vaccines have been reported in the children fed the virus or in contacts.

From the various investigations and human trials, it seems to be well established that attenuated live virus vaccines can produce alimentary resistance and humoral antibodies comparable to those found in naturally immune persons. While reports giving evidence of their protective value in the field have yet to appear, there is every reason to expect that it will be of a high order. There is also considerable evidence for the safety of those fed the vaccines. The important question is the safety of others in the community who are not fed the vaccines but acquire the viruses which have undergone multiplication in the alimentary tracts of the vaccinated or their contacts. It seems clear that most, and therefore probably all of the attenuated strains, can, under certain conditions not as yet understood, undergo some change to greater neurotropism. In most individuals where this has occurred, the excreted virus was still of very low virulence, but in a few instances mutants have appeared which may represent a further step in the direction of greater virulence, and there seems to be no fundamental reason why virulent variants could not ultimately emerge. There is little information about

the stability of naturally occurring polioviruses, but the wide spectrum of neurotropism exhibited by strains isolated from inapparent infections and the many variants which have been developed in the laboratory suggest that variation can occur in the course of spread from human to human. Dick[38] reported an instance in which the virus isolated from a case was highly neurotropic, but the virus from a contact was only slightly neurotropic, similar to some naturally occurring strains, and suggested that this might be an example of instability.

In countries where the infection rate is high, as for example Mexico, where 12% of children one to two years of age were found to be carrying poliovirus,[37] a large proportion of the viruses tested being neurotropic, an increase in virulence of the virus excreted by some individuals fed live vaccine would constitute no additional hazard of any significance. On the other hand, in a country such as Canada where the infection rate is relatively low, where cases are rare and the dissemination of poliovirus is at a low ebb during the winter months, the emergence of a virulent mutant could be a danger in any area where there remained susceptible individuals in the population.

It would seem wise, therefore, to avoid widespread or indiscriminate use of live virus vaccines in this country, where the results of inactivated vaccine are good and, with an increasing number who have received a booster dose, improving each year; nor has such use been advocated as yet for countries such as Canada.[34, 39] While trials of the living virus vaccines are proceeding in many parts of the world under diverse conditions, the immediate future should be utilized as fully as possible to study the behaviour of polioviruses in our communities and the impact of the wide use of inactivated vaccine upon them.

Such a policy would in no way preclude purposeful investigations of the properties of live virus vaccines, and their use in trials where the character of the excreted virus can be carefully studied and the spread limited. There is indeed every reason for serious efforts in this direction. A great deal of intensive research has been done by investigators of experience and imagination, and trials are proceeding in many other countries. The objective of the various fields of study is to find which method, or combination of methods, will ultimately provide the soundest and most durable protection, with assured safety, in the situation peculiar to each country.

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Men and Books

MASS SKIN GRAFTING IN THE NINETIES

IN JANUARY 1891, 146 persons donated a small portion of their skin to graft a large raw area on a Chicago patient. For an account of this unusual and historic operation, we are indebted to Dr. G. B. B. Buffam of Victoria, B.C., who forwarded an account of the event in the *Canadian Craftsman and Masonic Record* (25: 238, February 1891).

This journal records that one John O. Dickerson had submitted to an extensive operation for the removal of a cancer involving his right hip and thigh, and was left with a large raw area which was first grafted with skin from a couple of young goats without any success. The alternative of human skin was then considered, and since the patient was a Knight Templar, the local St. Bernard Commandery was approached and asked to volunteer portions of skin for their brother Mason. Out of 300 volunteers, 175 men were divided into three divisions and marched successively to the emergency hospital where the patient was anæs-

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thetized, and the wound cleansed and prepared for the graftings. As soon as he had recovered from the anæsthetic, grafting began.

"The willing and in some instances smiling victim for skinning was first taken into a room adjoining the operating one, and then, having exposed his left arm, the spot from which the skin was to be cut was first thoroughly rubbed, then washed with a preparation, the main ingredients of which were soap and water, after which the part was bathed with alcohol. Then with his razor he was taken into the operating room, where Dr. Fenger and his staff, Drs. Bernauer and Mahler, were in attendance. Dr. Bernauer deftly seized the razor, cut four lines on the arm to mark the size and boundaries of the piece of cuticle to be removed and then before the Knight of the Cross knew what was the matter, the piece of skin was shaved off, seized with a pair of pincers by Dr. Mahler, and handed to Dr. Fenger, who placed it on the raw and palpitating flesh of Brother Dickerson."

Out of the volunteers only 10% were rejected because of "sickness or blood contaminations or skin diseases". One volunteer had a double slice cut off his arm, because the doctor could not resist the generous submissive expanse of cuticle presented before him. The average extent of the skin cut off was about 1 sq. in. to each man. Antiseptics were liberally used, the razors being dipped in a solution of carbolic acid, and the donor area powdered with iodoform. The entire surface of approximately 1 sq. ft. was covered with 158 grafts, and the whole operation took up 3½ hours. Unfortunately there is no record of the outcome of the operation.

GENERAL PRACTICE

SEMINAR ON ALCOHOLISM

A ONE AND ONE-HALF day seminar course for physicians, especially those in general practice, is being planned at the Alcoholism Research Foundation of Ontario, 9 Bedford Road, Toronto, for Friday and Saturday, November 13 and 14, 1959. This is under the joint auspices of the Alcoholism Research Foundation and the College of General Practice of Canada. Attendance at the course will be limited to 25.

There will be three sessions of approximately three hours each on Friday morning, Friday afternoon and Saturday morning. At each session two or three members of the medical staff of the Foundation will make short presentations in the nature of working papers, to be followed by a discussion and at least one case problem.

The sessions will deal with:

Session 1—The nature of the problem: social background, psychopathology, physiology, organic pathology, etc.

Session 2—Medical management: treatment of the acute phase, management of complications, protective drugs and other medications following the acute phase.

Session 3—Other factors in treatment: psychotherapy, group therapy, rehabilitation units, Alcoholics Anonymous, etc.

Enquiries should be directed to Dr. John Armstrong, Medical Director, Alcoholism Research Foundation, 9 Bedford Road, Toronto, Ontario.

Attendance at this seminar qualifies for formal study credits for members of the College of General Practice. The Foundation would also be prepared to provide more prolonged periods of in-service training, for one or two physicians at a time, if this should be desired.

COLLEGE OF GENERAL PRACTICE BURSARIES

(Made possible by Schering Corporation Limited)

THE SCHERING CORPORATION LIMITED made available this year 10 bursaries to help members of the College of General Practice of Canada defray expenses incurred in attending postgraduate studies. These bursaries provide for concentrated two-week courses at the following hospitals:

The Montreal General Hospital; Dr. R. Roy, Chairman, Postgraduate Board.

l'Hôpital St-Luc, Montreal; Dr. Roméo Boucher, Chief of Medical Services.

University Hospital, Saskatoon; Dr. Allan A. Bailey, Secretary of the faculty in charge of arrangements.

The program of instruction is modelled on one in operation for some time at the Montreal General Hospital. It is hoped that more hospitals will be added to this program as more doctors seek postgraduate studies. The award winner may apply to the hospital of his choice at any time and ask that a two-week course be arranged for him. This course will include daily ward rounds, attendance at all conferences and at surgical procedures, techniques and specialist clinics in either medical or surgical specialties.

Pre-selection by the award winner of the subjects he wishes to study is encouraged. For instance, he may spend the whole time in cardiology if he chooses to do so. One of the staff men will be assigned to supervise the course and to meet with the participant from time to time to discuss the problems arising. The recipient will pay $100 out of the $500 award to the hospital, retaining the balance to help cover his other expenses. These bursaries have been allocated one to each province, the recipient being chosen by the provincial award committee from both their active and associate members.

The following are the award winners for 1959:

British Columbia.—Dr. Stafford Z. Bennett, Alexander Ave., Vancouver.

Alberta.—Dr. Edward G. Evans, Vermilion.

Saskatchewan.—

Manitoba.—Dr. B. Symchych, 3rd St. N.E., Dauphin.

Ontario.—Dr. James A. Taylor, 73 Erie St. S., Leamington.

Quebec.—Dr. John C. MacKimmie, 593 Main St., Lachute.

New Brunswick.—Dr. Walter O. Chestnut, Carleton Co., Hartland.

Nova Scotia.—Dr. Samuel G. B. Fullerton, 20 Quinpool Rd., Halifax.

Prince Edward Island.—Dr. Harold P. Stewart, 224 Queen St., Charlottetown.

Newfoundland.—Dr. James Gough, St. John's General Hospital, St. John's.

UPJOHN SCHOLARSHIPS—1959

THE UPJOHN COMPANY of Canada made available this year 18 scholarships of $500 each to members of the College of General Practice.

These scholarships are meant to help defray expenses incurred in attending postgraduate courses, and are open to any member of the College of General Practice of Canada. The course must be of a minimum duration of two weeks and may be in any hospital in Canada or the United States. On completion of the course, the recipient is required to submit to the Executive Director of the College: (a) a signed record of his attendance; (b) a written report of the course and his judgment of its value in practice.

These scholarships have been allocated according to provincial membership in the College, as follows: six in Ontario; three in Quebec; two in B.C., and one each in the remaining provinces.

The provincial awards committees have chosen the recipients from the active and associate members of their respective provinces, and the following are the award winners for 1959:

British Columbia.—Dr. Adam C. Waldie, 4326 West 10th Ave., Vancouver; Dr. Jacob H. Kope, Enderby.

Alberta.—Dr. W. R. V. Laing, Hanna.

Saskatchewan.—Dr. Robert E. C. Ritchie, Brock.

Manitoba.—Dr. Richard T. Okumura, P.O. Box 190, McCreary.

Ontario.—Dr. W. V. Zaharuk, 162 Cathcart St., Sault Ste. Marie; Dr. E. R. Somerleigh, 1st St., Nipigon; Dr. S. L. Handford, 705 2nd Ave. W., Owen Sound; Dr. Gerald L. Blanchet, 2453A Bloor St. W., Toronto; Dr. J. A. Thomson, 134 Spruce Ave., Box 121, Elliot Lake; Dr. C. T. Lamont, Elisabeth St., Thamesville.

Quebec.—Dr. Dollard Larouche, 178 rue Bossé, Chicoutimi; Dr. Georges H. Levesque, 475 ave. Royale, l'Ange Gardien, Co. Montmorency; Dr. Roger A. Caron, 2021 Chamberland, Trois-Rivières.

New Brunswick.—Dr. Vernon A. Snow, Hampton.

Nova Scotia.—Dr. Henry A. Myers, 102 Church St., Amherst.

Prince Edward Island.—Dr. W. E. Callaghan, Water St., Summerside.

Newfoundland.—Dr. Alan W. James, Grand Falls Clinic, Grand Falls.

Association Notes

C.M.A. GENERAL COUNCIL

The 92nd Annual Meeting of the General Council of the Canadian Medical Association met in the Royal York Hotel, Toronto, on May 29 and 30, 1959. Dr. Norman H. Gosse of Halifax, N.S., Chairman of Council, welcomed the members and Dr. Lorne Whitaker of Ontario brought them greetings on behalf of the Ontario Medical Association. The roll call was taken and a Committee on Resolutions was set up consisting of the following members: Dr. F. Turnbull, British Columbia; Dr. G. E. Wodehouse, Ontario; Dr. Ian Rusted, Newfoundland.

In introducing the business of the day, Dr. Gosse said that the Executive Committee at its last meeting had decided to try to cut down as far as possible the amount of reading of reports at this meeting, in order to give more time for debate. He therefore asked committee chairmen and others to present their reports in synopsis so far as possible.

The report of the Committee on Archives was presented by Dr. J. B. Ritchie, who had taken over the chairmanship of this committee last year from Dr. H. E. MacDermot. Dr. Ritchie paid a tribute to his predecessor and to his endeavours as historian of the Association. In addition to the History of the Canadian Medical Association, Volume II of which had recently appeared, Dr. MacDermot is actively engaged in preparing "One Hundred Years in Canadian Medicine" to celebrate the centenary of the Association which is now only eight years distant. Dr. Ritchie recommended that the 10 divisions of the Canadian Medical Association each organize a divisional Committee on Archives, whose chairman should act as a corresponding member of the C.M.A. committee. This would facilitate collection of historical material close to its source. In his own province of Saskatchewan, Dr. Ritchie said, the Provincial Archives Committee was well up-to-date. Many short biographies on medical men who had served with the North-West Mounted Police had been unearthed, and these men had been given their due recognition. Much help had been obtained from the late Dr. John E. Valens. Similarly, in Manitoba Dr. Ross Mitchell was making a great contribution as historian, and the same could be said of Drs. E. P. Scarlett and G. S. Stanley of Calgary and Dr. H. Jamieson of Edmonton. He hoped that other provinces would make similar efforts. He concluded with a tribute to famous medical women doctors.

Executive Committee Report

During the debate on the report of the Executive Committee, Dr. A. F. VanWart took the chair while Dr. Gosse summarized certain informative sections of the report and read in full other sections which merited debate. Thanks were expressed to the Atlantic provinces for their help in connection with the 91st Annual Meeting last year in Halifax, N.S. Preparations for the 92nd Annual Meeting were described, and it was pointed out that this meeting was unique in that it was divided chronologically, geographically and functionally into three distinct parts: (a) the meeting of General Council on May 29 and 30; (b) the Annual General Meeting in Toronto on June 30 when His

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Royal Highness, The Duke of Edinburgh, would be installed as President of the Canadian Medical Association; (c) the joint meeting with the British Medical Association in Edinburgh on July 18 to 24. Because of this tripartite meeting, the Executive Committee had recommended the following delineation of duties pertaining to current officers of the Association, elective members of the Executive Committee and their successors. The officers and members of the Executive Committee elected by General Council on May 29 and 30, 1959, are not to assume office forthwith but to be considered as beginning their term of office at the close of the scientific session in Edinburgh on July 24. The newly elected officers and members of the Executive Committee would however be expected to attend the meeting held on May 31. With the installation of the President on June 30, his Canadian deputy, Dr. E. Kirk Lyon, would assume all duties connected with his office and the current President would then assume the duties of Past-President. At the scientific sessions in Edinburgh, the current officers and members of the Executive Committee would carry out any duties connected with their positions and at the conclusion of the sessions on July 24, their successors would be considered to have been installed. General Council ratified this arrangement.

The 93rd Annual Meeting will be held in Banff, Alberta, on June 13 to 17, 1960. The following is the remaining schedule of divisional Annual Meetings for 1959: Nova Scotia Division, Keltic Lodge, Cape Breton, June 23 to 27; Prince Edward Island Division, Charlottetown, August 28 and 29; New Brunswick Division, St. Andrews, September 2 to 5; Alberta Division, Edmonton, September 28 to October 1; Manitoba Division, Winnipeg, October 5 to 9; British Columbia Division, Victoria, October 13 to 16; Saskatchewan Division, Saskatoon, October 19 to 22.

At the end of the last calendar year the membership of the Canadian Medical Association amounted to 13,170 as against 12,347 in 1957. No requests for affiliation had been received during the current year. At present 20 national medical societies and 13 medico-lay organizations were affiliated.

A new C.M.A. educational activity was announced. The Canadian Association of Radiologists had requested that the Canadian Medical Association become active in the approval of schools for radiological technicians. This request was agreed to and the necessary organization will be established to carry it out. A special Committee on Approval of Schools for Radiological Technicians has been authorized, and Dr. E. A. Petrie of Saint John, N.B., has accepted the chairmanship. A basis of approval is being elaborated with the help of the Canadian Association of Radiologists and the Canadian Society of Radiological Technicians. It is hoped that this new activity will operate for the benefit of education in radiography in a manner similar to that in laboratory technology.

The new addition to C.M.A. House, Toronto, is now being constructed, and Council were informed that tenders had been received on March 10 ranging from $198,000 to $213,000. The contract had been awarded to the firm of Gardiner-Wighton, the lowest tenderer. Council agreed that an additional sum of $50,000 should be made available for expenditure on the new building, including the installation of air-conditioning machinery.

Council were informed of the resignation of the Canadian Medical Association as a member of the Joint Commission on Accreditation of Hospitals, and the launching of the all-Canadian program of hospital accreditation in January last. It was agreed that the work of the Canadian Council on Hospital Accreditation should receive financial support as proposed in the later report of the Committee on Hospital Services and Accreditation.

The attention of Council was called to the fact that the new Canadian Medical Retirement Savings Plan had achieved in a very short period a greater success than any similar group-plan in the country. Because of this success, many inquiries had been received from interested associations in the United States and from individuals to whom the C.M.R.S.P. was favourably known. Per capita contributions of participants in C.M.R.S.P. were high and total membership was just in excess of 2000. More members were urged to re-examine the advantages of participation in this very favourable and flexible plan.

In 1958 a sub-committee of the Executive Committee, comprised of Drs. Douglas, Quintin and Thomson, carried out a study of the scope and function of Trans-Canada Medical Plans. They gathered a great deal of information by correspondence, questionnaires and personal visits to member plans and divisions. A written report was forwarded to Trans-Canada Medical Plans, and Dr. Douglas gave a short résumé of this report. Dr. Douglas emphasized that the sub-committee had found a great lack of interest in prepaid medical care right across Canada. He felt that doctors in general should be better informed on the changes in the economic situation. Recommendations of the sub-committee were divided into consideration of: (1) the part to be played by Canadian medicine; (2) the part to be played by the member plans. As regards organized medicine, it was recommended that C.M.A. provide the leadership in interpreting the philosophy of organized medicine on medical care, create a special committee on prepaid medical care to work in conjunction with the Committee on Medical Economics, and increase its representation on the commission of T.C.M.P. to two members appointed by the Executive Committee. It was also recommended that an educational campaign on prepaid medical care be undertaken by the C.M.A. through the medium of its Journal, and through the provincial bulletins, through forums and lectures at annual meetings and by any other available means. As for T.C.M.P., it was agreed that that organization should function simply as a trade association for the member plans; in other words it should concentrate on the mechanics of providing prepaid medical care without developing philosophies. Speaking on this subject, the chairman of the Committee on Medical Economics warned Council that organized medicine had to show that private enterprise could provide prepaid medical care, in view of the increasing acceptance of the philosophy that it was proper for government to provide this. One important problem was that section of the community which had difficulty in obtaining prepaid medical care; steps must be taken to study means of including them in any doctor-sponsored schemes.

At this point a resolution from the Manitoba Division of the Canadian Medical Association was read and ably presented by Dr. L. Rabson, urging the formation of a special committee of the C.M.A. to be known

as the "Committee on Prepaid Medical Care", for the continuous study of all matters pertaining to health insurance and medical service. This committee would be asked: "(a) To study and make available to C.M.A., facts, data and recommendations with respect to timely and proper provision of prepaid medical care for the people of Canada; (b) to investigate matters pertaining to the economic and social aspects of prepaid medical care; (c) to study and resolve matters of health insurance of common interest to C.M.A. and the prepaid plans in Canada, in order that each may assist the other to provide the best possible medical service to the people of Canada; (d) to utilize the functions and personnel of the Bureau of Medical Economics; to hold meetings as frequently as necessary for the proper completion of its terms of reference and to maintain a close liaison with the Economics Committee and the Executive of the C.M.A."

During debate of this motion, which was supported by the Ontario Division, members of the latter clarified the statements about prepaid medical care which had appeared in the press following meetings of the council of the O.M.A. The O.M.A. point of view was that before plans for providing such care were formulated by government the medical profession ought to be consulted to make sure that the plans were realistic; acceptability of plans by the profession would depend on their being in the best interests of the patient. The people of Ontario had the right to say whether they wanted the government to enter prepaid medical care, but the profession as the providers of such care had the right to determine such matters as the standards of care, and the mode of remuneration. As one O.M.A. representative put it, they were not interested in being in the business of health insurance simply for business' sake, but in order to protect the interests of the patient. The motion was carried, and a vote of thanks was passed to Dr. Douglas and his colleagues for their work.

The activities of the Advisory Committee to the Federal Government during the past year were reviewed. The attention of this committee had been focused on the old problem of the relationship of practising physicians to the Indian and Northern Health Services. The Advisory Committee had prepared a brief setting out the main difficulties and seeking clarification of the degree of government responsibility for health service to Indians. This brief was presented and debated at a meeting in Ottawa on February 19 attended by the Minister of Citizenship and Immigration, the Minister of National Health and Welfare, and other government officials. The Director of Indian and Northern Health Services had undertaken to prepare a statement for C.M.A. scrutiny, embodying the policy of the Federal Government on its health responsibilities. An information bulletin on the attitude of the profession to developments in hospital care insurance had been prepared by the nucleus of the Committee on Public Relations and distributed to members of both Houses of Parliament and to the news media.

It is understood that the Canada Shipping Act may be revised shortly, and a resolution from the B.C. Division asking the C.M.A. to prepare a full statement on the medical complications of this Act was carried.

Council were informed of the amendment to the Act of Incorporation of the Canadian Medical Association, which had recently been the subject of a private bill in the Federal Parliament. Two C.M.A. members, Senator J. A. Sullivan and Dr. H. M. Horner, had sponsored the bill in the Senate and House of Commons respectively and presented the measure most effectively. The measure had received the Royal assent so that the amendments, which would permit the Association to do certain things not envisaged in its original constitution, were now the law of the land.

Council were informed that the returns from the survey of salaried physicians undertaken in the early part of 1959 were now being analyzed; the findings will be published in due course. Preliminary scanning confirms the impression that a growing proportion of the medical profession derive their income from salaried employment.

The Executive Committee reported the publication of Volume II of the History of the Canadian Medical Association, written by Dr. H. E. MacDermot, and now available to members at $2.50 per copy. It also reported the arrangements for the XIIIth General Assembly of the World Medical Association in Montreal, September 7 to 12, 1959. Preparations for a distinctively Canadian meeting were in hand, and Drs. N. H. Gosse and M. A. R. Young had been appointed C.M.A. delegates, with Drs. T. J. Quintin and Lorne Whitaker as alternates. The Executive Committee would meet in Montreal on Sunday, September 6, to facilitate adequate C.M.A. representation at all functions. On the previous week, August 30 to September 4, the Second World Conference on Medical Education would take place in Chicago and the following Canadian doctors would participate as speakers or panelists: Dr. R. F. Farquharson, Dr. J. Wendell Macleod, Dr. G. H. Ettinger, Dr. J. A. MacFarlane, Dr. A. L. Richard, Dr. R. R. Struthers and Dr. R. A. Macbeth. It was estimated that the share which the C.M.A. might assume of the new W.M.A. budget in 1960 would be $10,000. It was suggested that the Canadian Supporting Committee be reactivated with a view to providing a portion of this increased assessment.

It was also reported that the British Commonwealth Conference, which first met in Saskatoon in 1949, would hold a meeting in London, England, July 11 to 14, 1959, and the Association would be represented by Dr. E. K. Lyon and Dr. A. D. Kelly.

Nominating Committee

The following Nominating Committee was elected: Drs. C. D. Kean, T. Laidlaw, A. L. Murphy, F. C. Jennings, T. J. Quintin, L. Whitaker, E. E. Johnson, E. R. Stewardson, J. W. Macgregor and J. F. Tysoe.

Report of Honorary Treasurer

Dr. G. W. Halpenny of Montreal, Honorary Treasurer, submitted his financial report for the year ending December 31, 1958, as audited by Messrs. McDonald, Currie and Company. He indicated that the net worth of the Association on December 31, 1958, was $655,217. Of this amount $148,000 is invested in land, buildings and furniture and a further $250,000 is committed for the erection of an addition to C.M.A. House. He stated that the Association had had a very successful year, and that the surplus from 1958 operations would enable the Association to finance the new building addition without selling bonds presently held. Partici-

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pation in the Canadian Medical Retirement Savings Plan compared favourably with that in other registered retirement savings plans in Canada, and individual contributions were running at a high level. To date, total contributions had exceeded $4,300,000 of which $1,600,000 had been invested in the insured annuity plan and $2,700,000 had been invested in the common stock plan. Investment results had exceeded expectations. Full details and a balance sheet will appear in our September 1 issue as usual.

Reports of the Editor and Managing Editor

The editor of C.M.A. publications, Dr. S. S. B. Gilder, reported briefly on the year's activities, drawing attention to the fact that the title of the *Canadian Medical Association Journal* now appeared in the two official languages of the country, that the backlog of publications had been kept down to reasonable limits again last year, and that every endeavour was being made to develop the *Journal* as a news medium and as a medium for rapid publication of important research. He also stressed the growing success of the new *Canadian Journal of Surgery*. He informed Council that he had been asked to serve as editor of the *World Medical Journal*, the official organ of the World Medical Association, on the resignation of the former editor, Dr. Austin Smith. This request had been put forward by the council of the W.M.A. after their meeting in Australia in April, and agreed to by the Executive Committee of the C.M.A.

The report of the Managing Editor, Dr. T. C. Routley, showed a more profitable year than 1957 as regards the *Canadian Medical Association Journal*, and a slight margin of profit on the first year's working of the *Canadian Journal of Surgery*. Dr. Routley said that considerable thought had been given to the advisability of launching a second specialized journal in the field of internal medicine and clinical investigation in Canada. After much exploration of this matter, it had been decided that a better alternative would be to publish the *Canadian Medical Association Journal* weekly as from January 1, 1960. Council agreed with the view of the Executive Committee that this should be done. This Journal will therefore appear from next January in a weekly form, and it is hoped that this venture will be as successful as was the changeover from monthly to twice a month publication in 1955.

Committee on Occupational Medicine

Dr. R. G. Warminton, chairman of this committee, presented a short report in which he stated that a brochure on "Guiding Principles for the Practice of Occupational Health" was reaching final form and would soon be available for publication and distribution. A resolution that the provision of occupational health services in industry should be a matter for determination by the employers concerned rather than by a third party, was referred back for further study.

Committee on Maternal Welfare

The report of the Committee on Maternal Welfare was presented by Dr. Thomas Primrose, who brought heartening news of provincial activities in this field. He said that after a long latent period, the provincial maternal welfare committees had really become active and problems of maternal deaths were now being studied intensively from coast to coast. From the data available, it would seem that hæmorrhage still tops the list of causes of maternal death throughout the country, even in larger centres. However, toxæmia also carries a heavy toll. These causes of death might be cut even further by provision of more adequate blood replacement facilities and further education of the public and profession in the need for more intensive antenatal care. Little had been heard during the past year of the use of oral abortifacients, but intravaginal insertion of caustics, such as potassium permanganate, had again become popular; for instance, seven cases had recently been seen by Dr. Primrose on his service. Several deaths had been reported throughout the country in 1958 of overwhelming sepsis due to infected criminal abortions. Provincial committees on maternal welfare were urged to contact their provincial demographers to ensure that a clause in provincial death certificates was retained, inquiring whether any woman dying was actually pregnant at the time of death or recently pregnant.

Income Tax

The chairman of the Committee on Income Tax, Dr. R. M. Mitchell, commented on their success in having the Minister of National Revenue agree that for the purpose of income tax deductions for attendance at the C.M.A. meeting this year, the three parts of that meeting—the meeting of General Council on May 29 and 30, the Annual General Meeting on June 30 and the scientific sessions in Edinburgh in July—would all constitute parts of the 92nd Annual Meeting. He also discussed negotiations with the income tax authorities on hardship which might arise when a participant in the Canadian Medical Retirement Savings Plan had a sharp drop in his income from one year to the next, and was not allowed to transfer the excess of his previous year's savings above the 10% limit to the following year.

Public Health

Dr. G. E. Duff Wilson presented the report for the Committee on Public Health. The committee had been asked by the Association to advise on its possible sponsorship of a Canadian branch of the International Federation of Sports Medicine; this was not advised because in general it appeared that the International Federation was concerned only with highly trained athletes. Nevertheless, the Committee on Public Health hoped that the C.M.A. would identify recreation as a part of preventive medicine and undertake some study of the present unsatisfactory scientific background of physical fitness. The C.M.A. should make available its advice and counsel by seeking representation on the governing bodies of reputable organizations whose aim was to promote physical fitness of Canadians. This subject would also include, of course, rehabilitation from illness. The Committee on Public Health would seek further advice and information on this subject and later make a recommendation for the part to be played by organized medicine in Canada in raising the standards of physical fitness of the nation. The committee was authorized by Council to collaborate with other health agencies if requested in further study of the beneficial effects of fluoridation of water supplies on dental health. In discussion of this report, Dr. G. Sawyer described the activities of an Ontario Medical Association commit-

tee which had been studying such questions as the suitability of games at various ages, health education curricula, treatment of sports injuries, etc.

Hospital Accreditation

The report of the Committee on Hospital Services and Accreditation was presented by its chairman, Dr. N. N. Levinne. He presented a balance sheet and budget for the Canadian Council on Hospital Accreditation, which had surveyed 128 hospitals in Canada during 1958. It is anticipated that 125 to 150 surveys will be conducted in 1959. Dr. Levinne pointed out that some types of hospitals such as mental hospitals have not yet been included in surveys, and also that smaller Canadian hospitals were not participating as fully in the program as they might. It was expected that the workload of the Canadian Council would increase considerably and it was recommended that the contribution of participants in the Council should be at a rate of $4000 per seat for 1960 instead of the previous $2500. This was agreed.

Training of Interns

The Committee on Approval of Hospitals for the Training of Junior Interns reported that there are at present 78 hospitals approved in Canada. This is about one-half of the 148 Canadian general hospitals of over 150 beds in size that are eligible for approval. On January 1, 1959, there were 1154 junior internships including undergraduate and graduate varieties in C.M.A. approved hospitals. It is becoming increasingly apparent that all intern training programs require a careful evaluation from time to time, and the committee proposes to invite 10 to 12 hospitals to participate in a self-evaluation program. Junior interns will be asked to complete a questionnaire designed to elicit the type and quality of training received during the year of rotation.

Remuneration of interns was discussed, and after some debate an amended resolution was carried "that in order to assist in the recruitment of medical students in Canadian universities and to provide a more adequate income for junior interns, the C.M.A. approve the principle of adequate remuneration of junior interns". Mr. Jules Harris, President of the Canadian Association of Medical Students and Interns, asked that his organization be given two voting seats on the General Council of the C.M.A., but it was felt that voting members of Council should be full members of the Canadian Medical Association, and the request could not therefore be granted.

Chairman of Council's Valedictory Address

Towards the end of the afternoon session on May 29, Dr. Norman H. Gosse, the retiring Chairman of Council, delivered a valedictory address to Council in which he ranged over a wide field. He expressed appreciation of the great improvement in quality in Canadian provincial medical journals during the last few years, urged increased support for the World Medical Association, whose potential for good was great, and expressed the belief that unity in the medical profession was somewhat greater than it had been several years previously. He then made a number of suggestions for reorientation and adjustment in the internal organization of the Canadian Medical Association. At the close of his address he received a standing ovation.

Saturday, May 30

The Saturday morning session of General Council began with some continued debate on the report of the Committee on Approval of Hospitals for the Training of Junior Interns. Drs. Crutchlow and Stewardson wanted Council to make a more realistic approach to intern remuneration and to name an actual figure, but Dr. Whitaker pointed out that remuneration was a provincial matter and that it was impossible to name an overall national figure. It was finally recommended that the matter of remuneration of junior interns be referred to the divisions for further study by the tariff committees.

Ethics

Dr. P. O. Lehmann presented the report of the Committee on Ethics, in which the main item referred to the desirability and ethics of dispensing by doctors of such commodities as spectacles and hearing-aids. The committee felt that while dispensing of certain commodities had originally been undertaken by physicians to provide a service not otherwise available to their patients, it should now form no part of the practice of medicine except in special circumstances. The committee therefore brought forward a resolution which in essential suggested that dispensing of "all commodities related to the practice of medicine" should be dissociated from the work of practitioners except in places where those with special training or qualifications for dispensing were not available. In debate, it was suggested that since this matter might be taken to apply to the dispensing of drugs, further consultation with interested bodies such as the College of General Practice of Canada was desirable. The matter was therefore referred back to the Committee on Ethics for further study.

Report of the Nominating Committee

The report of the Nominating Committee was now brought in, and the following nominations were approved by Council, and the gentlemen declared elected:

President-Elect—Dr. R. M. Parsons of Red Deer, Alberta.

Chairman of Council—Dr. Murray S. Douglas of Windsor, Ontario.

Treasurer—Dr. G. W. Halpenny of Montreal, Quebec.

Executive Committee

British Columbia—Representative, Dr. P. O. Lehmann; Alternates, Dr. J. F. Tysoe until October 1959; Dr. E. C. McCoy after October.

Alberta—Representative, Dr. A. A. Haig: Alternate, Dr. J. W. Macgregor.

Saskatchewan—Representative, Dr. E. R. Stewardson: Alternate, Dr. H. D. Dalgleish.

Manitoba—Representative, Dr. R. W. Richardson: Alternate, Dr. A. M. Goodwin.

Ontario—Representatives, Dr. L. Whitaker; Dr. W. W. Baldwin; Dr. W. W. Wigle: Alternate, Dr. Ian Davidson.

Quebec—Representatives, Dr. R. Lemieux; Dr. T. J. Quintin: Alternate, Dr. F. W. Fitzgerald.

New Brunswick—Representative, Dr. George M. White: Alternate, Dr. Paul Melanson.

Nova Scotia—Representative, Dr. R. O. Jones: Alternate, Dr. H. J. Devereux.

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Prince Edward Island—Representative, Dr. J. McMillan: Alternate, Dr. J. H. Maloney.
Newfoundland—Representative, Dr. J. D. Roberts: Alternate, Dr. D. Cant.

The Nominating Committee also recommended that the Committee on Organization of the C.M.A. should study the function and structure of the Nominating Committee with a view to suggesting improvements. Drs. Parsons, Douglas and Halpenny then addressed General Council briefly.

The report of the Committee on the Medical Aspects of Traffic Accidents was presented by Dr. E. Crutchlow. Various provincial activities in this field were mentioned and meetings between this committee and the Executive of the Canadian Highway Safety Conference were described.

Economics

The report of the Committee on Economics was presented by Dr. R. K. Thomson. It was agreed that divisional appointments to the Committee on Economics should be applicable from July 1 of one year to June 30 of the succceeding year. Reference was made to the Newsletter which is currently circulated to divisions by the Bureau of Economics of the C.M.A., and now has a circulation of 300. During the debate on the report of the Executive Committee, a resolution had been brought in by Dr. H. B. Morgan that the Executive Committee study ways of increasing the circulation of this newsletter or some equivalent means of disseminating the news contained in it. This was agreed upon. Progress in the Relative Value Study was reported, with reference to the circulation of the conclusions of the central committee to divisions of the C.M.A. The committee had acted on a recommendation of the 1958 General Council asking them to prepare informative documents delineating acceptable standards of medical contracts and methods of negotiation. Sample documents had been distributed to divisional secretaries. The committee had studied the question of collective bargaining on behalf of salaried physicians, and pointed out that the survey of salaried physicians recently undertaken in Canada would be helpful in this respect. It felt that salaried physicians should be informed that the C.M.A. and its divisions were actively interested in their problems. Standard forms for insurance claims and weekly indemnity had been prepared by C.M.A. representatives in conjunction with representatives of the Canadian Life Insurance Officers Association and the Canadian Life Insurance Medical Officers Association, and Council approved these forms in principle.

Cancer

The report of the Committee on Cancer, read by Dr. A. D. Kelly in the absence of the chairman, Dr. H. K. Fidler, mainly referred to the program of cancer education of physicians undertaken in Nova Scotia last fall and this spring. Experience had varied with the district concerned; speakers had sometimes found good attendance and stimulating audiences and at other times a poor audience with local apathy. They favoured regional meetings, mainly clinical with a high degree of audience participation and fitted into a general postgraduate scheme rather than operated separately.

Public Relations

Dr. E. Crutchlow presented the report of the Committee on Public Relations, noting that for the first time in history the chairman and members of the nucleus of the public relations committee had been located outside the city in which the central office of the C.M.A. was situated. He described the efforts which the C.M.A. had made in the past year to approach the Federal Government at three levels: first, the ministerial level; secondly, the level of physician members of the Federal Government, and thirdly, the level of all members of the Parliament. The first level concerned the advisory committee to the Federal Government; the second-level approach had taken place at an informal meeting in Ottawa on January 29, 1959, at which physician members of Parliament were informed of current C.M.A. activities on behalf of the profession; the third-level approach was made via a bulletin which dealt with the profession's attitude towards the current hospital insurance program. The committee felt that in these approaches their fundamental objective was not to try to forestall or modify legislation relating to medical service, but to ensure that the advice of the medical profession was sought by government where it was required.

It was reported that three TV filmettes showing the Canadian doctor in action during three phases of medical practice would be ready shortly, and that once again a series of ten medical articles had been sponsored by the C.M.A. and published in the magazine section of the Toronto *Globe and Mail* this year.

An important section of this report concerned the showing of medical TV programs on open circuits. It was agreed that programs depicting operating room scenes should be controlled and that the operative technique should not be the main feature of the presentation. Such views of the operation field as were necessary should be incidental to the main theme, and the balance of the program should feature other phases of medical technique in keeping with the history of the case concerned. Debate on this subject revealed some divergence of views. Dr. H. Pritzker wondered whether the C.M.A. should endorse open-circuit TV programs at all. Dr. E. Kirk Lyon felt that many surgical programs he had seen, particularly from the United States, were undesirable and that the medical profession was under no obligation to turn the public into medical graduates or even first-year medical students. On the other hand, other members of Council felt that the medical profession should use all modern means for the health education of the public. Dr. Lyon wondered whether the medical profession was not contributing towards the creation of a race of neurotics by all this fussy propaganda about health. He thought that the problem of widespread neurosis was now more important than that of cancer. Dr. Crutchlow pointed out that the percentage of health information actually being disseminated by organized medicine was very small; most of this education came from a host of voluntary organizations. Dr. G. E. Wodehouse said that the problem could not be dealt with simply by ignoring it; programs on health education would go on whether the medical profession joined in or not, and it was as well for organized medicine to steer these programs into the right channels.

The chairman described the work of the Public Relations Committee on medical recruitment, listing a number of items which might be included in a

brochure on the subject of medicine as a career. These items would include a brief list of medical achievements by Canadian doctors, a list of medical specialties, a list of academic requirements for Canadian medical schools, an outline of the curriculum and fees involved, a list of available bursaries and a section on post-graduate study. It was suggested that the brochure should also include something about the Code of Ethics, and specifically about general practice and group practice.

A recommendation of the committee that the doctors' plaques about medical fees, made by the C.M.A., should not be re-ordered after the supply had run out was accepted after a debate in which opinions were mixed on the efficacy of these plaques.

A resolution was brought in from the British Columbia Division which asked that in view of the increasing responsibilities and importance of the C.M.A. in national affairs, the need to communicate the collective opinion and advice of Canadian doctors to the Federal Government, the need to inform the membership of policies and principles in this regard, the need to inform the general public of such policies and principles, and the lack of familiarity of doctors with the facilities of communication with government or public, the C.M.A. should consider a reorientation of their public relations program, and specifically should consider the employment of public relations counsel in an advisory capacity in addition to the present secretariat. This resolution was introduced by Dr. J. B. Lunam, who outlined the steps in the B.C. program in which a firm of public relations counsel had been employed. This had included such items as a public opinion survey, interviews with newspaper editors, and panel discussions between the doctors and newspaper editors. The firm employed had made valuable suggestions for improvement of the divisional organization, and it was felt that they could also help the national body. On the other hand, Dr. L. Whitaker expressed disappointment in the usefulness of public relations counsel in the past and opposed the approach to government through public relations personnel. He thought that such an approach should be made on the highest level. Dr. A. A. Haig felt that divisions differed greatly in their public relations techniques, and said that his division could not agree with this resolution. Dr. T. C. Routley asked the cost and was told that the B.C. program cost $10,000 a year plus $3000 in service fees for specific pieces of work. The B.C. motion was finally referred to the incoming executive committee for further study.

Pharmacy

The report of the Committee on Pharmacy was presented by Dr. K. J. R. Wightman, who described steps to implement the recommendation of the C.M.A. that ataractics, sedatives and hypnotics be placed on the prescription list by the Food and Drugs Division of the Department of National Health and Welfare. A new drug advisory committee had been appointed with representatives from the medical profession, pharmacists and the pharmaceutical industry. A small sub-committee consisting of the chairman of the Committee on Pharmacy of the C.M.A., a representative of the Canadian Pharmaceutical Manufacturers' Association and permanent officials of the Food and Drug Division had been set up to advise on matters respecting prescription drugs. Criteria had been established for placing drugs on the prescription list immediately. These included new drugs in which animal or clinical experiments had shown indications of injurious action, drugs which people might be tempted to use without medical advice, drugs designed exclusively for treatment of a serious disease, drugs causing insidious and poorly recognized toxic effects, habit-forming drugs, and drugs known to be abused for illegal or immoral purposes. It was agreed that the fullest publicity would be given to the new prescription list when it was issued by the department.

Dr. J. W. Macgregor presented the report of the *Committee on Approval of Schools for Laboratory Technologists,* which had considered applications from 13 hospitals and approved 10 of them during the last year. There were now 101 schools for such training in Canada, approved by the committee. By arrangement with the Canadian Council on Hospital Accreditation, re-inspection reports were being provided to the committee when field representatives visited Canadian hospitals where approved schools were located.

The report of the *Central Program Committee* was presented by Dr. E. F. Brooks, who indicated some of the difficulties which had arisen in preparing the extremely complex program for the Edinburgh meeting.

Medical Education

The report of the Committee on Medical Education was presented by Dr. R. O. Jones, who demonstrated the difficulty in providing evidence either that there was a real decrease in the numbers of medical students applying for admission to medical schools or that their calibre was less. Factors which might tend to limit the numbers of applicants included the length of the medical course, the acquisition by other professions such as engineering and natural sciences of tremendous prestige in recent years, the unfortunate tendency of some members of the medical profession to advise young men against a career in medicine, the fear of increase of government control of medicine, and the cost of training. The committee suggested certain measures to deal with the last-named problem, such as reduction in the initial cost of medical education by provision of more scholarships and loans and by government aid, and compensation for the high cost of medical education and long period of low income by special tax exemptions to permit repayment of debts incurred during this period. Efforts should also be made to counter the insidious influence of some physicians in their advice to younger men.

Radiological Technicians

The report of the Committee on Approval of Training Schools for Radiological Technicians was presented by Dr. E. A. Petrie who expressed pleasure that the C.M.A. had seen fit to undertake to approve these schools, in view of the fact that the program was too extensive for the Canadian Association of Radiologists and the Canadian Society of Radiological Technicians to handle. An appendix to his report included a very comprehensive list of minimal requirements for approval of training schools for radiological technicians, including rules and regulations for examination of candidates for membership in the C.S.R.T. During the past

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year all approved hospitals had been circularized and invited to submit their application for approval of their x-ray training school; a large number had replied and the applications were being dealt with.

Rehabilitation

Dr. A. T. Jousse presented the report of the Committee on Rehabilitation, in which the establishment of active rehabilitation programs in Ottawa, Kingston, Port Arthur, Hamilton and Fredericton was noted. Dr. Jousse pointed out that each time a new centre was opened the impetus towards rehabilitation led to an immediate demand for more auxiliary workers, and the limiting factor in further development was availability of these workers. He felt that although there was a shortage of medical personnel willing to devote their full time to rehabilitation medicine, there was no reason why physicians and surgeons in other branches of medicine should not be equally willing to make themselves available. Considerable time and study had been devoted during the past year to arriving at satisfactory solutions to problems created by the introduction of hospital insurance.

The General Council adjourned at 2:50 p.m. on Saturday afternoon, May 30.

ASSOCIATION LUNCHEON

A Canadian Medical Association luncheon was held in conjunction with the meeting of General Council and the Annual Meeting of the Ontario Medical Association on Friday, May 29, in the Royal York Hotel. The guest speaker on this occasion, which incidentally coincided with Ladies' Day of the Ontario Medical Association Meeting, was the president of the C.M.A., Dr. A. F. VanWart. Dr. VanWart began by saying: "According to our by-laws it is an obligation of the President of The Canadian Medical Association to give an address at the Annual Meeting which terminates his presidency. This year's Annual Meeting as you are aware is divided into three parts, this meeting of General Council in May, the inauguration of your new President in June and the joint clinical session with the British Medical Association in Edinburgh during July. The problems created by these unusual circumstances have made it necessary that the presidential address this year should be given at this meeting of General Council. So today I speak not only to my own General Council but also to the members of the Ontario Division."

Dr. VanWart pointed out that in former years the address of the retiring president was heard only by members of the medical profession assembled at the Annual Meeting and no extensive public coverage was visualized, but that present-day interest in public relations had led to a great increase in his audience. He said that, in speaking to the divisions, he had endeavoured to leave with each province some thoughts on the problems presented by hospital insurance plans. He wished to point out to the Ontario Division that the medical profession which now controlled the admission and discharge of patients to hospitals must continue to do so. They must also tackle the question of over-utilization. It had been suggested that each hospital should establish a small committee of doctors to control the admissions and discharges and to ensure a rapid turnover of patients. Any attending physician should welcome any impartial board of his colleagues elected by his own medical staff to determine the touchy problems of admission and discharge after consultation with the physician concerned. He urged the medical profession to be on the alert to see that cost reductions in hospitals did not curtail the progress of medicine. He felt that it was to the credit of governments that they had left the boards of management of hospitals in the hands of local citizens. With the expenditure of increasing amounts of public moneys in hospitalization, it was natural that high standards of excellence would be demanded; to ensure this, the voluntary program of hospital accreditation must continue under the auspices of organized medicine. These two safeguards, voluntary service given by members of hospital boards of management and the work of the present Canadian Council on Hospital Accreditation, would make it possible to continue the parallel advance of medicine and of hospital services.

Dr. VanWart then turned his attention to the problems created by national campaigns undertaken for funds by so many voluntary organizations concerned with specific diseases or groups of diseases. These campaigns were expensive, and the public tended to resent so many campaigns for funds by different bodies. He felt that the medical profession had some responsibility in helping to solve these problems and that the C.M.A. should explore the possibilities of studying the situation with the organizations concerned.

He commended to the attention of all his colleagues, and particularly the younger members of the profession, the Canadian Medical Retirement Savings Plan as an excellent method of providing retirement income. He congratulated the Ontario Division on the progress made by the Women's Auxiliary to the O.M.A., which was the only active provincial organization of doctors' wives. He thanked all those members of divisions of the C.M.A. who had shown such unvarying kindness and hospitality to his wife and himself during the past year. He said that it had been a privilege to serve the profession and that he hoped, like all his predecessors, that he was leaving the Association a little stronger than when he started his presidential year. He hoped that there would be a big gathering of doctors on Tuesday, June 30, when he would instal his successor, H.R.H. Prince Philip, Duke of Edinburgh, and he wished the deputy president, Dr. E. Kirk Lyon, as good support as he himself had received from the membership during the presidential year.

C.M.A. DINNER TO GENERAL COUNCIL

On the evening of Friday, May 29, the General Council of the Canadian Medical Association were indebted to the Ontario Medical Association for an excellent dinner in the Roof Garden of the Royal York Hotel. Dr. W. W. Baldwin of Brooklin, President of the Ontario Division, was in the Chair, and speechmaking was kept to a commendable minimum on this occasion. The toast of the Canadian Medical Association was proposed by Dr. Murray S. Douglas of

Windsor, Ontario, and responded to by Dr. Norman H. Gosse of Halifax. Some excellent entertainment under the direction of Mr. Stanley St. John concluded a most agreeable evening.

OUTGOING EXECUTIVE COMMITTEE

The outgoing Executive Committee of the Canadian Medical Association met in the Board Room at C.M.A. House, Toronto, on May 27 and 28, 1959. They were informed that the amendment to the Act of Incorporation of the Canadian Medical Association had passed the House of Commons on March 10, 1959, and received the royal assent. They were also informed that Dr. E. A. Petrie had accepted the chairmanship of the new Committee for Approval of Schools for Radiological Technicians; they agreed to the appointment of the following as members of this committee—Dr. John Bouchard and Dr. Guillaume Gill of Montreal; Dr. J. G. Stapleton of Hamilton; Dr. E. W. Spencer of Saskatoon; and Dr. J. D. Stevenson of Vancouver. They approved the report of the House Committee, presented by Dr. T. C. Routley, in which he described the award of the contract for construction of the new addition to C.M.A. House to the firm of Gardiner-Wighton Limited and stated that construction had started on April 6. Certain unexpected difficulties had been discovered during the process of excavation, and put up the cost of the work. It was recommended and agreed that the sum of $200,000 authorized for construction be raised to $250,000 in order to deal with these matters and also to include the installation of mechanical and electrical equipment connected with heating, ventilation and air-conditioning.



Alex Gray, Toronto

Outgoing Executive Committee, May 28, 1959. Seated (left to right): Dr. T. C. Routley, Dr. G. W. Halpenny, Dr. A. F. VanWart, Dr. N. H. Gosse, Dr. E. K. Lyon, Dr. M. A. R. Young and Miss M. E. Zoellner. Standing (left to right): Dr. M. R. Dufresne, Mr. B. E. Freamo, Dr. A. F. W. Peart, Dr. J. A. McMillan, Dr. E. F. Crutchlow, Dr. C. D. Kean, Dr. R. O. Jones, Dr. T. J. Quintin, Dr. G. M. White, Dr. R. Lemieux, Dr. L. Whitaker, Dr. M. S. Douglas, Dr. W. W. Baldwin, Dr. A. A. Haig, Dr. R. W. Richardson, Dr. P. O. Lehmann, Dr. E. R. Stewardson, Dr. A. D. Kelly, Dr. R. K. Thomson, Dr. S. S. B. Gilder and Mr. K. C. Cross.

A report of the arrangements of the Annual Meeting was received for information, and also a synopsis of arrangements for the meeting of the Assembly of the World Medical Association in Montreal. The appointment of Dr. S. S. B. Gilder as Editor of the *World Medical Journal*, recommended by the Council of the W.M.A., was confirmed. Dr. M. A. R. Young and Dr. N. H. Gosse were appointed C.M.A. representatives at the Second World Conference on Medical Education.

It was agreed that the C.M.A. should convene a study group representative of the Canadian Health Insurance Association, Canadian Life Insurance Officers' Association, Trans-Canada Medical Plans, the Canadian Council of Blue Cross Plans and the C.M.A. This study group would investigate the area of common problems and, if favourable to the formation of a Canadian Health Insurance Council, would outline the purposes and objects, consider the ultimate membership and suggest a form of organization. It was agreed that Dr. A. D. Kelly should act as chairman of this study group and should be given power to add to C.M.A. representation.

Interim reports were received from the editor and the managing editor, and the Executive Committee gave its approval to the publication of the *Canadian Medical Association Journal* weekly as from January 1, 1960. It also approved the appointment of additional staff which would be required for the weekly journal. The Executive Committee was informed that the cost of republishing Volume I of the History of the Canadian Medical Association would be $2475 for 500 copies. No action was recommended.

After considerable debate on the proposals of the Federal Government to assist its employees in the Civil Service to procure health insurance coverage, some data on which were provided by Mr. D. Millican, the president of the Quebec Hospital Services Association, the Executive Committee approved the draft of a letter to be sent by Dr. A. D. Kelly to the Hon. Donald M. Fleming, Minister of Finance. In this letter Dr. Kelly reiterated the interest of the medical profession of Canada in promoting medical care of the highest quality and referred to the sponsoring of prepaid medical care through Trans-Canada Medical Plans. He pointed out the large number of federal civil servants who were actually covered by member plans of T.C.M.P. already, and suggested that existing service plan coverage of this type should not be disturbed in the instances where the groups concerned desired to continue it.

Dr. R. W. Richardson reported on the meeting of the commission of T.C.M.P. which had just been held, and stressed in particular his gratification with the broader view which the member plans appeared now to be taking of the provision of medical care. Practically all of the recommendations of the C.M.A. subcommittee chaired by Dr. Murray Douglas have been adopted by the commission, and the C.M.A. was thanked for its work. He stressed the need for panel discussions and other contributions on prepaid medical care at annual meetings, articles in the *Canadian*

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Medical Association Journal on this subject, and public relations material to educate the doctors.

The Executive were informed that three TV filmettes arranged by the Public Relations Committee were almost ready; they voted a grant of up to $1000 for participation of the C.M.A. in the O.M.A.'s health fair, Mediscope 1959, to be presented in Toronto next fall.

The Executive also expressed the willingness of organized medicine to offer help to nursing organizations in solving problems concerned with nursing education. Dr. M. A. R. Young reported on the work of the N.R.C. Advisory Committee on Medical Research which met in Ottawa on March 6 and 7. Operating grants, term grants and equipment grants awarded in 1958-1959 amounted to $1,257,628 and requests for 1959-60 amounted to $2,280,006. Even if all requests were approved, funds were not available to meet such a figure. It had been the hope of the Research Council that a substantial increase in grants would be forthcoming but the present financial position of the government made this most unlikely. A very successful western regional meeting of the N.R.C. had been held in Banff January 26 to 29, 1959, with presentation of some 90 papers of excellent quality.

After a number of smaller items had been dealt with, the Executive Committee spent the remainder of its time considering reports to be presented to General Council and commenting on them.

INCOMING EXECUTIVE COMMITTEE

Because the proceedings of General Council had terminated in the early afternoon of Saturday, May 30, the time of meeting of the incoming Executive Committee was advanced from Sunday morning to Saturday afternoon, and the committee actually met at 3:10 p.m. in the Prince Edward Island Room of the Royal York. After the roll call and introduction of new members, Dr. Murray Douglas was elected as chairman and the report of the Committee on Committees was considered. The following were elected:

Standing Committees

Advisory Committee to the Federal Government
- Dr. M. S. Douglas, Windsor, Ont. (Chairman)
- Dr. P. O. Lehmann, Vancouver
- Dr. J. R. Lemieux, Quebec
- Dr. E. K. Lyon, Leamington (ex officio)
- Dr. R. W. Richardson, Winnipeg
- Dr. R. K. Thomson, Edmonton
- Dr. R. M. Mitchell, Sudbury
- Dr. M. R. Parsons, Red Deer, Alberta
- Dr. N. R. Philpott, Montreal
- Dr. A. D. Kelly, Toronto (ex officio)

Committee on Archives
- Dr. J. B. Ritchie, Regina

Committee on Awards, Scholarships and Lectures
- Dr. R. M. Janes, Toronto

Committee on By-Laws
- Dr. M. O. Klotz, Ottawa

Committee on Cancer
- Dr. H. K. Fidler, Vancouver

Central Program Committee
- Dr. E. F. Brooks, Toronto

Committee on Economics
- Dr. R. K. Thomson, Edmonton

Committee on Ethics
- Dr. Wallace Wilson, Vancouver

Committee on Hospital Service and Accreditation
- Dr. N. Levinne, Toronto (Chairman)
- Dr. E. K. Lyon, Leamington
- Dr. F. Murray Fraser, Halifax
- Dr. B. H. McNeel, Toronto

Committee on Income Tax
- Dr. R. M. Mitchell, Sudbury (Chairman)
- Dr. J. D. Leishman, Regina
- Dr. N. J. Blair, Vancouver
- Dr. G. E. Chalmers, Fredericton
- Dr. M. O. Klotz, Ottawa
- Dr. T. J. Quintin, Sherbrooke
- Dr. G. W. Halpenny, Montreal (ex officio)
- Dr. A. D. Kelly, Toronto (ex officio)

Committee on Approval of Hospitals for the Training of Junior Interns
- Dr. L. O. Bradley, Winnipeg (Chairman)
- Dr. J. F. C. Anderson, Saskatoon
- Dr. A. F. W. Anglin, Toronto
- Dr. Lea Steeves, Halifax
- Dr. R. Dufresne, Montreal
- Dr. D. Munroe, Vancouver
- Dr. E. W. Nancekivell, Hamilton

Committee on Approval of Schools for Laboratory Technologists
- Dr. J. W. Macgregor, Edmonton (Chairman)
- Dr. Carlton Auger, Quebec
- Dr. W. J. Deadman, Toronto
- Dr. John Orr, Kingston
- Dr. J. Eden, Vancouver
- Dr. D. F. Moore, Saskatoon
- Dr. D. W. Penner, Winnipeg
- Dr. D. Hugh Starkey, Montreal

Committee on Maternal Welfare
- Dr. Thomas Primrose, Montreal

Committee on Medical Education
- Dr. R. C. Dickson, Halifax

Committee on Nutrition
- Dr. H. leRiche, Toronto

Committee on Occupational Medicine
- Dr. R. G. Warminton, Niagara Falls

Committee on Pharmacy
- Dr. K. J. R. Wightman, Toronto

Committee on Public Health
- Dr. G. E. Duff Wilson, Kitchener

Committee on Public Relations
- Dr. E. F. Crutchlow, Montreal

Committee on Approval of Schools for Radiological Technicians
- Dr. E. A. Petrie, Saint John

Committee on Rehabilitation
- Dr. G. Gingras, Montreal

Committee on the Medical Aspects of Traffic Accidents
- Dr. Wallace Troup, Ottawa

Special Committees

Liaison Committee with l'Association des Médecins de Langue Française du Canada
- Dr. R. Vance Ward, Montreal (Chairman)
- Dr. Sylvio LeBlond, Chicoutimi
- Dr. J. H. M. Rice, Campbellton

Committee on Prepaid Medical Care
- Dr. J. A. McMillan, Charlottetown (Chairman)
- Dr. D. I. Rice, Halifax
- Dr. G. E. Wodehouse, Toronto
- Dr. T. J. Quintin, Sherbrooke (with power to add)

Committee on C.M.A. Organization
- Dr. P. O. Lehmann, Vancouver (Chairman)
- Dr. T. J. Quintin, Sherbrooke
- Dr. J. A. McMillan, Charlottetown

Editorial Board
- Dr. S. S. B. Gilder, Toronto (Chairman)
- Dr. M. H. Brown, Toronto
- Dr. D. E. Cannell, Toronto
- Dr. J. H. Ebbs, Toronto
- Dr. R. F. Farquharson, Toronto
- Dr. W. V. Johnston, Toronto
- Dr. H. E. MacDermot, Montreal
- Dr. Burns Plewes, Toronto
- Dr. T. C. Routley, Toronto
- Dr. A. B. Stokes, Toronto
- Dr. K. J. R. Wightman, Toronto

Finance Committee
- Dr. G. W. Halpenny, Montreal (Chairman)
- Dr. N. Belliveau, Montreal
- Dr. D. Sclater Lewis, Montreal
- Dr. R. Vance Ward, Montreal

House Committee
- Dr. T. C. Routley, Toronto (Chairman)
- Dr. A. D. Kelly, Toronto
- Dr. A. F. W. Peart, Toronto
- Dr. S. S. B. Gilder, Toronto
- Mr. B. E. Freamo, Toronto

Committee on International Relations
- Dr. N. H. Gosse, Halifax (Chairman)
- Dr. C. B. Stewart, Halifax
- Dr. R. C. Dickson, Halifax

Committee on Relative Value Studies
- Dr. R. M. Janes, Toronto (Chairman)
- Dr. W. E. Armour, Toronto
- Dr. R. S. Braiden, Toronto
- Dr. D. E. Cannell, Toronto
- Dr. J. Gollom, Toronto
- Dr. D. J. MacKenzie, Toronto

Staffing Committee
- Dr. M. S. Douglas, Windsor
- Dr. T. C. Routley, Toronto
- Dr. L. Whitaker, St. Catharines

Trusteeship Committee
- Dr. G. W. Halpenny, Montreal
- Dr. E. W. Mitchell, Toronto
- Dr. T. Tweed Samis, Toronto

Appointment of C.M.A. Representatives on Outside Bodies

Association of Canadian Medical Colleges
- Dr. R. C. Dickson, Halifax

Canadian Council on Hospital Accreditation
- Dr. N. Levinne, Toronto
- Dr. E. K. Lyon, Leamington
- Dr. B. H. McNeel, Toronto
- Dr. Murray Fraser, Halifax

Liaison Committee, Canadian Pharmaceutical Association
- Dr. J. K. W. Ferguson, Toronto
- Dr. R. Dufresne, Montreal
- Dr. K. J. R. Wightman, Toronto

Defence Medical and Dental Services Advisory Board
- Dr. T. E. Holland, Winnipeg
- Dr. H. S. Morton, Montreal
- Dr. A. D. Kelly, Toronto
- Dr. A. F. W. Peart, Toronto (alternate)

Dominion Council on Nutrition
- Dr. H. leRiche, Toronto

Health League of Canada
- Dr. F. R. Griffin, Toronto

Associate Committee on Medical Research, National Research Council
- Dr. M. A. R. Young, Lamont

Canadian Commission on Nursing
- Dr. H. T. Ewart, Hamilton
- Dr. William Storrar, Montreal
- Dr. M. A. R. Young, Lamont
- Dr. A. F. W. Peart, Toronto (ex officio)

Physicians' Art Salon
- Dr. G. E. Tremble, Montreal (Chairman)
- Dr. G. Harvey Agnew, Toronto
- Dr. Arthur Murphy, Halifax

Canadian Society of Radiological Technicians
- Dr. E. A. Petrie, Saint John

National Advisory Committee on Rehabilitation of Disabled Persons
- Dr. G. Gingras, Montreal

Trans-Canada Medical Plans
- Dr. R. W. Richardson, Winnipeg

Victorian Order of Nurses
- Dr. J. H. B. Hilton, Ottawa

Messrs. McDonald, Currie and Company were reappointed as Association auditors and the Royal Trust Company as the financial adviser. The General Secretary was asked to press for the early release of the government statement on Indian medical services, and also to prepare a full statement on the complications created by the Canada Shipping Act in relation to medical care. The Executive Committee referred to the Committee on Economics the request to study ways and means of increasing the circulation of the Economics Newsletter. They authorized the circulation to divisions of the forthcoming brochure on occupational medicine, and its publication after editing. They asked that the Public Relations Committee consider the question of employment of public relations counsel at their next PR workshop, to be held in the forthcoming autumn. It was agreed that the committee to examine the C.M.A.'s fee structure should be appointed by the Chair.

The next meeting of the Executive Committee was set for Sunday, September 6, in Montreal at the Queen Elizabeth Hotel. The Executive were informed that the 93rd meeting of the C.M.A. to be held on June 13 to 17 in Banff was already being considered in Alberta. Dr. Harry Morgan of Calgary is chairman of the local committee on arrangements. It was agreed that in future the Canadian Medical Association would officially invite representatives of l'Association des Médecins de Langue Française du Canada, the Royal College of Physicians and Surgeons of Canada and the College of General Practice to the Canadian Medical Association's Annual Meeting and have them represented on the platform at the Annual General Meeting.

The Executive Committee adjourned at 6:00 p.m.

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BRITISH MEDICAL ASSOCIATION—CANADIAN MEDICAL ASSOCIATION

JOINT ANNUAL MEETING

Supplementing the material published in the issue of April 1, we present below additional information about program, functions and arrangements.

Members of C.M.A.

All C.M.A. members and their families should register at the Assembly Club, George Street, Edinburgh, which will be open daily from 9 a.m. to 6 p.m. from July 18 to 24.

Badges

Members will not be admitted to any of the scientific meetings, exhibitions, or social functions unless wearing a membership badge, which may be obtained on registration. The officers of scientific sections and other office-holders should inquire for their special badges at the Reception Bureau.

Map of Edinburgh

A map of Edinburgh showing the meeting places and car parks is available to any member on application to the Local General Secretary, B.M.A. Scottish Office, 7, Drumsheugh Gardens, Edinburgh, 3.

Special B.M.A. Transport

Members are advised to make use of the special transport which will be arranged daily from the various hotels and hostels to the meeting places. Details will be displayed at the Reception Bureaux.

Catering Arrangements

Arrangements have been made to provide luncheons and buffet meals at the University Union (adjoining the McEwan Hall), the Students' Common Room (University Old Quadrangle), and the College of Art.

Irish Dinner

The Irish Graduates' Dinner will be held in the University Staff Club, Chambers Street, Edinburgh, on Friday, July 17, at 7.30 for 8 p.m. All Irish graduates, together with their ladies, will be welcome at this dinner. Tickets (30s. each, including aperitifs) may be obtained on application, with remittance, to Dr. G. P. Crean, Western General Hospital, Edinburgh, 4.

Jewish Services

The Edinburgh Synagogue is situated in Salisbury Road between Newington Road and Dalkeith Road. Services are held each week-day morning at 8 a.m. and each evening at 7 p.m. The service on Friday evening, July 17, will be at 8.30 p.m. and on Saturday morning, July 18, at 10.15 a.m.

An invitation is extended to all Jewish visitors to be present at the Sabbath morning service on Saturday, July 18. After the service there will be a Kiddush in the Synagogue Hall in honour of the B.M.A. Conference.

The Secretary of the Edinburgh Hebrew Congregation is Mr. Harold Oppenheim, whose office is at 11, Melville Crescent, Edinburgh—telephone Edinburgh 34018. Any Jewish visitors wishing further information are advised to contact him.

A Meeting for Doctors and Clergy

Representatives and their ladies are cordially invited to a Meeting of Doctors and Clergy to be held in Adam House, Chambers Street, on Friday, July 17, at 8.15 p.m. This meeting is arranged annually by the Churches' Council of Healing during the Annual Representative Meeting.

Dr. G. W. Ireland, Chairman of the Scottish Council of the B.M.A. and a member of the Church of Scotland's Commission on Spiritual Healing, will take the chair, and the two speakers will be the Lord Bishop of Edinburgh and Professor Stanley Alstead, Regius Professor of Materia Medica and Therapeutics in the University of Glasgow.

Medico-Legal Symposium

A medico-legal symposium will be held at 10.30 a.m. on Tuesday, July 21, in Adam House, Chambers Street. This symposium has been arranged jointly by the Canadian Medical Protective Association and the British medical defence societies and is open to members of the C.M.A. and the B.M.A. and to lawyers. It is expected to last about two hours.

Dr. Armstrong, President of the Canadian Medical Protective Association, will be in the chair. The Canadian speakers will be Dr. T. L. Fisher (Secretary-Treasurer, Canadian Medical Protective Association) on "Sexual Sterilization," and Dr. J. H. B. Hilton (Associate Secretary-Treasurer, Canadian Medical Protective Association) on "Foreign Bodies"; and the British speakers will be Dr. Alistair French (Secretary, Medical Protection Society) on "Medico-Legal Problems of Anæsthesia," Dr. Philip Addison (Secretary, Medical Defence Union) on "Consent to Operations, etc., in the case of Patients aged between 16 and 21", and Mr. Wolstencroft (Solicitor to the Medical and Dental Defence Union of Scotland) on "Some Aspects of Medical Negligence".

Newsreel Film of the Meeting

Messrs. W. R. Warner are sponsoring the production of a newsreel film of this meeting. The purpose of the film will be to provide a record of the main points of the meeting, especially the scientific aspects. This film will be available to both B.M.A. Divisions and Branches at home and overseas. It is hoped that it will be used in conjunction with showings of other B.M.A. scientific films, and also as useful evidence of the interest of the Association in scientific activities, and to encourage members to attend Annual Meetings in the future.

DETAILED TIME-TABLE OF SECTION MEETINGS

Section	*Date*	*Time*	*Meeting place*
Anæsthetics	Mon., July 20	2.30 p.m.	Adam House, 3rd Floor
	Tues., July 21	2.30 "	K.B., Chemistry Lecture Theatre
	Wed., July 22	2.00 "	" " "
Anatomy and Physiology	Tues., July 21	2.30 "	*West Lecture Theatre
Cardiology	Tues., July 21	2.30 "	Adam House, 3rd Floor
	Wed., July 22	9.00 a.m.	Adam House, 3rd Floor (Round-Table Conference)
	Wed., July 22	2.00 p.m.	Adam House, 3rd Floor
	Thurs., July 23	9.00 a.m.	Adam House, 3rd Floor (Round-Table Conference)
	Thurs., July 23	2.30 p.m.	McEwan Hall
	Fri., July 24	9.00 a.m.	Adam House, 1st Floor (Round-Table Conference)
Chest Diseases	Thurs., July 23	2.30 p.m.	K.B., Zoology Lecture Theatre
	Fri., July 24	2.30 "	" " "
Child Health	Mon., July 20	2.30 "	" " "
	Wed., July 22	2.00 "	" " "
	Fri., July 24	2.30 "	*West Lecture Theatre
Dermatology	Thurs., July 23	2.30 "	*Biochemistry Lecture Theatre
General Practice	Thurs., July 23	2.30 "	Adam House, 2nd Floor
History of Medicine	Wed., July 22	2.00 "	Royal Medical Society
Medicine	Mon., July 20	2.30 "	Adam House, 1st Floor
	Wed., July 22	2.00 "	" " "
	Thurs., July 23	2.30 "	McEwan Hall
	Fri., July 24	2.30 "	Adam House, 1st Floor
Neurology and Neurosurgery	Fri., July 24	2.30 "	" " 3rd "
Obstetrics and Gynæcology	Mon., July 20	2.30 "	" " "
	Tues., July 21	2.30 "	" " 2nd "
	Thurs., July 23	2.30 "	" " 3rd "
Occupational Health	Thurs., July 23	2.30 "	K.B., Chemistry Lecture Theatre
	Fri., July 24	2.30 "	" " "
Ophthalmology	Thurs., July 23	2.30 "	Adam House Theatre
Orthopædics	Tues., July 21	2.30 "	" " "
	Wed., July 22	2.00 "	" " "
Oto-rhino-laryngology	Mon., July 20	2.30 "	" " "
Pathology and Bacteriology	Tues., July 21	2.30 "	*Biochemistry Lecture Theatre
Plastic Surgery	Thurs., July 23	4.00 "	Adam House Theatre
	Fri., July 24	2.30 "	" " "
Preventive and Social Medicine	Mon., July 20	2.30 "	*West Lecture Theatre
	Wed., July 22	2.00 "	" " "
Psychiatry	Mon., July 20	2.30 "	Jordanburn Hospital
	Tues., July 21	2.30 "	Adam House, 1st Floor
Radiology	Mon., July 20	9.15 a.m.	Western General Hospital
	Mon., July 20	2.00 p.m.	*Biochemistry Lecture Theatre
Rheumatic Diseases	Thurs., July 23	2.30 "	*West Lecture Theatre
Surgery	Mon., July 20	2.30 "	Adam House, 2nd Floor
	Wed., July 22	2.00 "	" " "
	Fri., July 24	2.30 "	" " "
Tropical Medicine	Thurs., July 23	2.30 "	Royal College of Surgeons
	Fri., July 24	2.30 "	" " "
Urology	Mon., July 20	2.30 "	Western General Hospital

K.B. = King's Buildings. *Teviot Place.

Round-Table Conferences

Thursday, July 23, 9 to 10.15 a.m. (Adam House)

THE PSYCHO-PHYSIOLOGY AND VALUE OF SURGERY IN MENTAL DISORDER

Chairman: Sir Russell Brain (London).

Speakers: Professor Wilder Penfield (Montreal), Professor J. S. Tyhurst (Vancouver), Dr. Allan Walters (Toronto), Professor Alexander Kennedy (Edinburgh), Mr. Wylie McKissock (London), Mr. Eric Strauss (London).

Friday, July 24, 9 to 10.15 a.m. (Adam House)

THE MANAGEMENT OF ULCERATIVE COLITIS

Chairman: Professor John Bruce (Edinburgh).

Speakers: Dr. K. J. R. Wightman (Toronto), Dr. Jacques Bruneau (Montreal), Dr. Robert M. MacDonald (Halifax, Nova Scotia), Dr. B. C. Morson (London), Dr. W. I. Card (Edinburgh), Professor Charles A. Wells (Liverpool).

ACCIDENT PREVENTION

Chairman: Mr. A. B. Wallace (Edinburgh).

Speakers: Dr. John Wyllie (Kingston, Ontario), Dr. J. B. J. McKendry (Toronto), Dr. F. M. Woolhouse (Montreal), Dr. W. E. Seiler (Edinburgh), Mr. John Barron (Salisbury).

ECZEMATOUS ERUPTIONS OF THE HANDS

Chairman: Dr. L. Ereaux (Montreal).

Speakers: Dr. B. Kanee (Vancouver), Dr. A. R. Birt (Winnipeg), Dr. Hammett A. Dixon (Toronto), Dr. J. Martin Beare (Belfast), Dr. G. A. Grant Peterkin (Edinburgh), Dr. F. F. Hellier (Leeds).

Medical Films

A daily program of films has been arranged as follows: In the Adam House Film Theatre: 10 a.m. to 1 p.m. on July 20, 21 and 22, and 10.30 a.m. to 1 p.m. on July 23 and 24. In the College of Art: 2.30 to 5 p.m. on July 20, 21, 23, and 24, and 2.30 to 4.30 p.m. on July 22. The films to be shown include the following, and detailed times of showing will be available at the Meeting.

Canadian.—Isolation and Perfusion of the Upper Extremity for Malignant Melanoma. Left Heart Catheterization. Extracorporeal Circulation for the Repair of Congenital and Acquired Heart Disease. A Study of Venous Flow. Repair of Ventral Hernia. An Obstetrical Forceps using a new Principle of Parallelism. Automatic Brain Scanning with Radioactive Iodine. Injuries to the Elbow-joint. Closure of Auricular Septal Defect under Hypothermia. Excision of Parotid Tumour.

British.—Jugular Venous Pressure. The Jugular Venous Pulse. Cholecystectomy. Billroth Gastrectomy. The Treatment of Cardiac Arrest. Pudendal Nerve Block for Forceps Delivery. The Management of Twins in Pregnancy and Labour. An Inquiry into General Practice. Middle Meningeal Hæmorrhage. Surgical Treatment of Parkinsonism. Traumatic Paraplegia. One Man's Challenge. Fenestration Operation. The Intracapsular Extraction of Cataract. A Ptosis Operation. Ocular Inflammation. Enzymatic Zonulysis in Cataract Extraction. Œsophageal Resection. Surgical Treatment of Œsophageal Atresia. Egg Inoculation in Medical Virology. Introduction of Spitz-Holter Valve in Congenital Hydrocephalus.

QUEBEC DIVISION: 21st Annual Meeting

The Quebec Division held its 21st annual meeting from May 7 to 9 in Chicoutimi. The meeting centred around the Hôtel-Dieu St-Vallier, which is an extensive group of buildings housing 900 beds and all the services of a great modern hospital. For the occasion the hospital auditorium, generously offered by the Religieuses Hospitalières, had been equipped with earphones for simultaneous translation. There was a good attendance at most sessions. By Thursday noon, registration had already surpassed the highest ever reached in any previous Quebec divisional meeting. A total of 316 physicians registered this year. The housing problem presented certain difficulties in that members and guests were housed not only in Chicoutimi itself but

also in some peripheral motels and at the Saguenay Inn in Arvida.

Scientific papers presented included a nice blend of technical topics and economics. The morning of the first day was taken up with teaching clinics on hypertension, closed treatment of fractures, staphylococcal pneumonia and empyema in infancy, and pre-eclampsia. Other scientific presentations included papers on the psychodynamics and therapy of depression by Dr. A. E. Moll, on low back pain by Dr. E. Lépine, on cost of public obstetrical care by Dr. G. B. Maughan and on the situation of the arthritic at work by Dr. deGuise Vaillancourt. All these speakers are from Montreal. Among the guests were Professor Paul Milliez of Paris, who spoke on hypertension in younger individuals, and illustrated his talks by a means of an excellent moving picture, and Dr. René Wegria, professor of medicine at St. Louis University School of Medicine, who spoke on regulation of the coronary circulation. Early care and management of head injuries was discussed by Dr. O'Connell, a neurosurgeon from St. Bartholomew's Hospital, London, England. The program also included panels on surgery of the biliary tract with Drs. Simard, Beaudry, Brisson, Charbonneau and Gagnon (all from Chicoutimi), and on the advisability (or otherwise) of a provincial hospital plan in Quebec with Dr. T. J. Quintin in the chair and Drs. M. Douglas ond P. P. L'Heureux as experts.

On Thursday night, an hour-long TV program on CBC originating from Hôtel-Dieu St-Vallier illustrated life in a modern hospital. Several interesting scientific and commercial exhibits were on display.

The organization departed from the usual schedule by placing the business meeting on the afternoon of Saturday instead of Friday. The following slate of officers was elected: Dr. S. LeBlond, president; Dr. G. Halpenny, president-elect; Dr. R. Lemieux, chairman of the board of directors; Dr. D. Kinnear, honorary secretary, and Dr. N. Belliveau, treasurer.

The social aspect of the program reflected the cordial hospitality which characterizes the people of this region. Apart from the daily luncheons, the guests were treated to a Saguenay dinner in Jonquière, a buffet dinner in Arvida and the annual banquet in Chicoutimi. Nobody died of thirst and the only casualties suffered were several cases of fractured French and contused English. The social program included a most interesting invitation from the Aluminum Company of Canada to visit both its giant Arvida plant and the equally impressive Shipshaw hydro-electric installation. The division can be rightly satisfied with having put on the most successful annual meeting so far, on its coming of age.

MEDICAL MEETINGS

ANÆSTHESIA RESEARCH

The 33rd Congress of the International Anesthesia Research Society was held in Miami Beach, Florida, on April 20-23, 1959. This is the oldest anæsthesia organization in North America, and has about 2000 members, of whom 250 are Canadians. Dr. Harold R. Griffith of Montreal is chairman of the Board of Trustees. The program of this year's Congress provided an extensive survey of the very wide field of interest of the modern anæsthetist. A few of the papers read are summarized below.

Dr. Peter Safar of Baltimore presented new data on resuscitation. In this and previous presentations Dr. Safar has proved beyond any doubt that the generally accepted methods of artificial respiration taught to first-aid personnel, boy scouts and others, are quite inadequate when actually measured for respiratory exchange. On the other hand, a simple method of intermittent positive-pressure ventilation, carried on either by "mouth to mouth" breathing or by the insertion of an airway into the pharynx, is quite effective and may be carried on by lay personnel after very short periods of instruction. Dr. Safar used anæsthetized curarized volunteers to simulate accident victims, and was able to demonstrate how easily women and children could maintain adequate ventilation by the airway technique.

A study of the influence of absorption on systemic toxicity of local anæsthetics, by Dr. John Adriani and associates in New Orleans, pointed out the rapidity of absorption into the blood of certain local anæsthetics applied topically to mucous membranes. Speed of absorption of cocaine or tetracaine is comparable to that in a fast intravenous injection.

Dr. Stevens J. Martin of Hartford discussed the etiology and treatment of sudden cardiac collapse. Cardiac arrest may be successfully treated in some cases where the patient is in essentially good physiological condition, but the etiological factors are complex and multiple. Precipitating factors are vagal stimuli and chemical derangements such as excess of CO_2 or lack of oxygen. Over five years, out of 83,000 cases there were 20 cases of cardiac arrest with nine survivals.

Anæsthesia for bronchoscopy was discussed by Dr. J. D. A. Firth of the Royal Victoria Hospital, Montreal, who advocated combined application of topical lidocaine 4% and intravenous thiopentone 2.5% in doses so small that respiration is not depressed. On the other hand, Dr. S. W. Helperin of Cleveland advocated general anæsthesia for this operation, using the Emerson "wrap around" respirator in order to maintain effective tidal exchange under all conditions except that of a blocked airway. This is a cuirass-type respirator which encloses the whole patient in a plastic bag.

Dr. Eric Webb, of Vancouver General Hospital, delivered an important and well-received paper on anæsthesia for the ambulant surgical patient. He pointed out how the advent of hospitalization insurance has filled the hospitals to such an extent that it is difficult to secure a bed for minor surgical cases. He described a service for certain categories of elective surgery done in the special "short stay" wards, and which now comprises 5% of all the work of his anæsthesia group. In such a service, safety is assured by rigid observance of rules as to premedication and preparation of the patient, by limiting the extent of surgery, by having proper apparatus and skilled anæsthetists on hand to meet possible emergencies, and by adequate supervision of the patient until he gets back to his own home. This type of anæsthesia service should also be provided for dentists' offices.

An interesting panel on open cardiac surgery emphasized the startling developments in this highly specialized field during the past few years. It was generally agreed that best results are obtained in the centres

where the work is carried on by experienced teams and where the best equipment and special hospital facilities are available. It is not in the patients' interest that surgery requiring extracorporeal circulation should be attempted in every general hospital.

However, another panel devoted to obstetrical problems concluded that good anæsthesia in this neglected field should be available to every mother in the smallest community hospitals. Dr. Herbert Ebner of Providence, R.I., reported on a very large series of simple spinal anæsthetics successfully conducted for vaginal deliveries, and Dr. W. K. Bannister of Hartford, Conn., made a plea for more attention to obstetrics by qualified anæsthesiologists.

A panel on recurrent staphylococcal infections in modern hospitals emphasized not only the widespread interest in this important problem, but also the role of the anæsthesiologist in minimizing this infection by proper attention to details before, during and after operations. Dr. Carl Walter, of Harvard Medical School, told the dramatic story of how one patient spread her Type 79 bacteriophage throughout the hospital as she wandered around just being "helpful" to the nurses.

A group from the Department of Anesthesiology of the University of Wisconsin under Professor Sidney Orth reported on a comparative study of chloroform and halothane (Fluothane) used in similar groups of patients. There appears to be very little difference between the effects of the old drug and the new one. Chloroform anæsthesia is still taught at Wisconsin, and used in about 3% of their surgery.

A guest of honour was Dr. Oscar Ribeiro of Rio de Janeiro, leading anæsthesiologist in the rapidly developing specialty in Brazil. Dr. Ribeiro spoke on anæsthetic techniques for tonsillectomies in children. His address emphasized the main theme of the Congress, namely that good anæsthesia for every-day operations in ordinary patients is a more vital need than the supply of a few good anæsthetists for heart or lung operations. Widespread knowledge and careful practice can save lives whether the patient is in Brazil or in Canada. H.R.G.

OBITUARIES

DR. RAYMOND E. BENNETT, 60, died on April 19 at St. John's, Newfoundland. A native of that city, he received his medical education at Dalhousie University and graduated in 1927. In the First World War Dr. Bennett served overseas with the Royal Flying Corps. After graduation in 1927 he became resident physician of St. John's General Hospital and a year later was appointed government physician of the Labrador Coastal Service. In 1929 Dr. Bennett went to London, England, for postgraduate work. As a specialist in pulmonary diseases, he was appointed Medical Superintendent of the St. John's Sanatorium in 1934, a post which he held until his death.

Dr. Bennett is survived by his widow, a daughter and two sons.

DR. EDGAR BOURQUE, 71, died at the Hôtel-Dieu Hospital, Moncton, N.B., on April 28 after a brief illness. He was born in Moncton and before taking up medicine was a reporter and news editor for local papers. A veteran of two World Wars, Dr. Bourque was discharged in 1919 as a first lieutenant, having served with the 127th Canadian Field Artillery. In the Second World War he was a major in the Medical Corps. In 1931 Dr. Bourque graduated in medicine from the University of Montreal and in 1933 he went to Dorchester as medical superintendent of the penitentiary. He moved to Shediac, N.B., in 1948, where he practised until the time of his death.

He is survived by his widow.

DR. PIERRE MASSON, Professor and Director of the Department of Morbid Anatomy of the University of Montreal, died in Montreal on May 11. *Monsieur Masson*, as he was known to his students, was born in Dijon in 1880 and took a master's degree in natural sciences at the University of Paris in 1905. In 1909 he was appointed assistant at the Institut Pasteur of Paris. He kept this appointment until 1919, when he was named to the chair of pathology in the University of Strasbourg. In 1926, Dr. L. C. Simard, now director of the Cancer Institute and the department of pathology of Notre-Dame Hospital in Montreal, was studying under Professor Masson and eventually induced him to come to Canada. Dr. Masson took charge of the pathology department at the U. of M. in 1927. For more than 30 years, he devoted himself to teaching and organizing pathology departments in various hospitals of Montreal (Notre-Dame, Hôtel-Dieu, Ste-Justine).

In 1923, Dr. Masson published a world-famous book on tumours which was re-edited in 1957. He published 120 original contributions to the literature of pathology. His pet topic was tumours of the nervous system. He is possibly best known for his Masson trichrome stain, which he devised in the course of his research on tumour tissue and is now used in all the pathological laboratories of the world.

Dr. Masson was venerated by his students and alumni. His lectures were the most regularly attended of all those listed in the curriculum. Not the least of their interest was due to diagrams and drawings so admirably illustrating his text.

He is survived by a daughter, Dr. Anne-Marie Masson, in charge of bacteriology at McGill's Institute of Pathology, to whom we present our most sincere sympathy.

DR. GEORGE MORRISON, 50, died suddenly in Calgary on April 13. Born in Saskatchewan, he studied medicine in the University of Manitoba, where he graduated in 1933. He then did postgraduate work in Dublin and Glasgow. On his return to Canada, Dr. Morrison set up a practice in Shaunavon, Sask. A few years later he joined a clinic at Regina and then moved to Calgary, where he had practised for the last seven years.

Dr. Morrison is survived by his widow and a daughter.

DR. W. J. TAUGHER, 76, of Prescott, Ont., died in the Ottawa Civic Hospital on April 23. He was born in Pembroke, Ont., and was educated at Queen's University, Kingston, where he graduated in 1906. In 1914 Dr. Taugher started a practice in Prescott and in 1920

his brother-in-law, Dr. C. F. McPherson, became his partner. In addition to his medical work, Dr. Taugher set a record for municipal service when from 1924 to 1945 he served for 12 terms as mayor of Prescott.

He is survived by his widow.

DR. A. E. TRITES, 60, died suddenly in Vancouver on May 5. Born in New Brunswick, he went to McGill University and graduated in 1924. In 1925 Dr. Trites moved to Vancouver, where he practised for two years before taking a five-year postgraduate course in New York. A specialist in obstetrics and gynæcology, he was senior obstetrician and gynæcologist at the Vancouver General Hospital and associate professor of obstetrics and gynæcology at the University of British Columbia. In the First World War Dr. Trites served overseas with the Canadian Heavy Artillery.

He is survived by his widow, a daughter and a son, Dr. A. E. W. Trites.

PROVINCIAL NEWS

ALBERTA

Medical Services (Alberta) Incorporated recently completed ten years of operation. The occasion was marked by an advertising campaign to acquaint Albertans with the plan, a ceremonial dinner attended by many who have been closely associated with prepaid medical care plans in Alberta, and the presentation of a suitable memento to the first two subscribers of M.S.I.

The annual report of the corporation indicates a very good position. 1958 saw the completion of the first year of the new individual contract. Of these there are 34,045 new and 30,680 transferees from group contracts. The total number covered by all M.S.I. contracts is 345,243 – approximately 28% of the population of the province. This number is an increase over 1957 of 96,223 or 39%. The number of signed professional members continues to increase and now totals approximately 92% of the physicians practising in the province.

At present the corporation pays 85% of the amount on submitted accounts. This may be increased to 90% within the year, though such a move would deplete the reserves and probably result in an increase in subscriber rates.

Professional officers in the corporation are: Dr. J. M. Lees, Edmonton, president; Dr. S. M. Schmaltz, general manager; and Dr. W. G. McPhail, director of medical services. Professional representatives on the board of directors are: Dr. Lees, Dr. R. M. Parsons, Red Deer, and Dr. L. Lewis, Medicine Hat.

Dr. W. C. MacKenzie has been named dean of the faculty of medicine at the University of Alberta to replace Dr. John Scott, who retires next September. Dr. MacKenzie has been professor of surgery at the University of Alberta since 1950. This summer Dr. MacKenzie is to deliver the biennial Mitchell Banks lecture at the University of Liverpool. During part of June and July he will act as visiting professor of surgery at St. Bartholomew's Hospital, London, replacing Sir James Paterson Ross, professor of surgery

During recent years the Provincial Training School at Red Deer has released an annual average of 60 of its 800 trainees. This is in marked contrast to the situation ten years ago when the majority of those admitted could expect to spend the remainder of their lives in confinement.

The change arose through a decision of the Alberta Department of Health to radically alter the approach to the problem of defective children. The trainees were moved out of the common residence into a village of smaller types of housing, the staff was expanded to permit more individual attention, occupational therapy was intensified, and academic studies were geared to the individual's capability.

The introduction of modern educational techniques has resulted in an employer demand for trainees that exceeds the supply. In discharging a trainee to useful employment, environment rather than high pay is the consideration. The school social worker investigates all aspects of placement and makes follow-up visits. Of considerable help in the school's program is the Parents' Association which holds several get-togethers a year at the school where they have had installed television sets, recreational equipment and other luxuries. A recently completed summer camp at Gull Lake is another parents' project.

Dr. L. J. le Vann is superintendent of the Training School while Dr. R. R. Maclean is Director of Mental Health Services in Alberta.

Dr. Konstantine Kowalewski, associate professor of experimental surgery at the University of Alberta Medical School and assistant director of the McEachern Research Laboratory, has been awarded the National Council of Jewish Women's first national "Outstanding New Canadian" award. The presentation was made at the annual convention of the organization in Ottawa by John Kidd, executive director of the Canadian Citizenship Council.

Dr. Kowalewski was born in Russia and received his early education in Poland. During the Second Great War he served with the Polish commandos and was a prisoner of the Germans until 1945. He then received his M.D. and Ph.D. from the University of Brussels. Coming to Canada in 1952, Dr. Kowalewski joined the staff at the University of Alberta three years later. The citation outlined his outstanding contribution to the country of his adoption. W. B. PARSONS

Erratum

Dr. W. G. McPhail, Director of Medical Services of Medical Services (Alberta) Inc., has drawn our attention to a point in connection with the notes on Medical Services (Alberta) Inc., which appeared in the May issue of this Journal, page 753, last paragraph on the page. The last sentence reads: "Patients of these doctors who hold a contract with M.S.I. must obtain a receipt from the doctor and submit this to the corporation which in turn reimburses the patient in the amount the contract calls for." Dr. McPhail points out that there is a significant difference between "reimbursement" as in Australia and "indemnity". He suggests that the sentence should read: "Patients of these doctors who hold a contract with M.S.I. must obtain an itemized statement from the doctor and submit this to the corporation which pays the patient in the amount the contract calls for."

(Continued on page 1020)

RADIOLOGIST WANTED

Fully qualified experienced radiologist required August or September to take over Department of Radiology in a 430-bed City Hospital in Mid-Western Canada. School of X-Ray Technology attached. Remuneration on fee for service basis.

Reply to Box 350, Canadian Medical Association Journal, 150 St. George Street, TORONTO 5, Ontario.

McGILL UNIVERSITY
POSTGRADUATE COURSE IN ANAESTHESIA

Sept. 14th—26th

This course is arranged as a review prior to the Certification and Fellowship Examinations and for practitioners engaged in part-time anaesthesia. The course lasts for a period of one or two weeks. The first week is one basically of lecture periods. A second week of practical instruction will be available, at no extra charge, to those requesting this option at the time of application.

Applicants and those making enquiries who are not postgraduate residents at McGill should apply to:

Dr. R. G. B. Gilbert,
Chairman, Dept. of Anaesthesia,
McGill University.

address: The Montreal Neurological Institute,
3801 University St.,
Montreal, P.Q.

Cost of the course is $35.00.

Lectures will be given at the Montreal Neurological Institute.

Cafeteria services are available at the Royal Victoria Hospital.

Advice can be given concerning Hotel and Lodging accommodation, on request.

Those interested please send for a programme.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

requires the full-time services of a medically qualified Assistant Editor. The successful candidate should have a high standard of English and some experience in the work of an editor. It is hoped that he will be available for duty in September. Adequate remuneration is offered. Candidates are requested to apply in writing, giving full particulars of their career and enclosing a photograph, to the Editor, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

World Medical Conventions

• SUMMER AND FALL 1959

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JULY—AUGUST		
July 3-5	Cologne, Germany	IV Congress of the International Union of the Medical Press
July 6-8	Paris, France	III International Congress of School and University Health
July 12-17	London, England	International Congress of Plastic Surgery
July 19-25	Montreal, Canada	IX International Congress of Pediatrics
July 23-30	Munich, Germany	IX International Congress of Radiology
July 26-30	Copenhagen, Denmark	XXI Congress of the International Psycho-Analytical Association
August 9-15	Buenos Aires, Argentina	XXI International Congress of Physiological Sciences
August 17-22	London, England	XI International Congress of the International Association of Logopedics and Phoniatrics

SEPTEMBER—OCTOBER		
September 1-7	Barcelona and Madrid, Spain	IX International Congress of the History of Science
September 6-12	Paris, France	III Congress of the World Confederation for Physical Therapy
September 11-18	Istanbul, Turkey	XV International Tuberculosis Conference
September 13-20	Munich, Germany	XVIII Congress of the International Society of Surgery
September 15-20 (approximate)	Lucerne, Switzerland	VIII Congress of the International Union of Railway Medical Services
September 18-20	Munich, Germany	IV International Congress of the International Cardiovascular Society
October	Strasbourg, France	VI International Congress of Therapeutics
Autumn	Munich, Germany	VIII International Congress of Comparative Pathology

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ONTARIO

Gairdner Foundation Dinner

Friday, May 15, was a happy day for seven distinguished physicians, for it was the day on which the first seven winners of the Gairdner awards for outstanding contributions to cardiology and rheumatology received their awards in Toronto. The awards were presented at a testimonial dinner at the York Club with Dr. R. F. Farquharson in the chair and Mr. James A. Gairdner, the generous benefactor and members of his family present. The awards were presented to the following: Dr. Alfred Blalock and Dr. Helen B. Taussig of Johns Hopkins Hospital, Baltimore, in recognition of their contribution to the surgery of congenital heart lesions ($25,000); Drs. Charles Ragan and Harry M. Rose of New York City, in recognition of their contributions to the laboratory diagnosis of rheumatic disease ($5000); Dr. W. D. Paton and Dr. Eleanor J. Zaimis of London, England, in recognition of their contributions to pharmacology, with particular reference to the role of methonium compounds in treatment of hypertension ($5000); and Dr. W. G. Bigelow of Toronto in recognition of his achievements in developing hypothermia in open heart surgery ($5000).

Tributes were paid to the generosity and farsightedness of Mr. Gairdner by Dr. Farquharson and Mr. W. O. Twaits, president of the Canadian Arthritis and Rheumatism Society. Both these speakers, as well as Dr. Harold Segall of Montreal, who represented the National Heart Foundation of Canada, stressed how much it meant to receive some recognition for such work, and what a stimulus it would be to other research workers. Dr. Segall said that the late Dr. Maude Abbott would have liked to be present on this important occasion.

Each of the award winners said a few words. Dr. Taussig said that research workers pursued their vocation fundamentally for the pleasure of the work, but it was good to get a reward, particularly one free from politics in a free country. Dr. Bigelow said that these gestures of Mr. Gairdner were a sign that the endeavours of workers in ivory towers were appreciated by the outer world.

In presenting the awards, His Honour, J. Keiller Mackay, Lieutenant-Governor of the Province of Ontario, said to the award winners "I salute you warmly and cordially in the name of grateful mankind."

QUEBEC

The 21st Annual Meeting of our Division held on May 7 to 9 at the Hôtel-Dieu St-Vallier in Chicoutimi recorded the largest attendance we have ever had. Over 300 doctors registered for the meeting. The scientific program and the scientific exhibits as well as the commercial exhibits were better than ever before. No one part of the program can, in all fairness, be singled out except possibly the panel discussion on medical economics held on the last day. Dr. T. James Quintin of Sherbrooke acted as the chairman, with Dr. Pierre Paul L'Heureux of St. Boniface, Manitoba, and Dr. Murray S. Douglas of Windsor, Ontario, as participants. The theme was "How to achieve a united front in representations to the Quebec government on establishment of hospital care insurance". This obviously can only be achieved through united efforts by our Division, l'Association de Médecins de Langue Française du Canada and the College of Physicians and Surgeons, P.Q.

Dr. Gerald Halpenny of Montreal, our honorary-secretary for the past 11 years, was chosen president-elect of the Division, while Dr. Douglas Kinnear of Montreal succeeds him as honorary-secretary. Dr. Sylvio LeBlond of Chicoutimi was installed as president, Dr. Normand Belliveau of Montreal as treasurer and Dr. Renaud Lemieux of Quebec as chairman of the board.

In the last two or three weeks, four of Montreal's larger hospitals have issued their annual reports, namely Notre-Dame, Royal Victoria, Queen Elizabeth and St. Mary's hospitals. The boards of directors from each hospital again report very substantial deficits, and in each case this has resulted in large measure from the continued increasing costs of hospital care as related to reimbursement under the Quebec Public Charities Act. The economic difficulties encountered by most if not all hospitals in this province, and it also is probably true for the rest of Canada, can perhaps be best illustrated by a quotation from the report of the board of directors of Notre-Dame Hospital. "The problem of medical and hospital costs is a very real one. It has not arisen out of malice, incompetency or dishonesty but has been created by the increased complexity of medical services available, and by the inadequacy of our present insurance and tax methods of paying for hospital care."

In the last few weeks our Division has lost through death two internationally known experts, Dr. Pierre Masson and Dr. William Cone. Dr. Masson, an expert on the pathology of tumour growth, died after a brief illness at the age of 79. He had been professor of pathological anatomy at the University of Montreal since 1927. Dr. Cone, one of the world's leading brain surgeons, died suddenly in his office at the age of 63. He had been associated with Dr. Wilder Penfield since the foundation of the Montreal Neurological Institute.

In memory of Dr. Cone, the Montreal Neurological Institute has established the William Cone Memorial Fund for research endowment. Already in hand or promised is a sum of about $140,000 and it is hoped that this fund will grow quickly and steadily, thereby increasing the endowment for research at this famous institution. The work of these two great experts will be greatly missed throughout Canada as well as the world.

What could have been a catastrophic situation was avoided by the quick action of the total staff of the Sacred Heart Hospital in Montreal on May 5. A sixth floor was being added to the east wing of this hospital when fire, which spread very rapidly, suddenly broke out among the building materials. Fortunately some 100 staff doctors were in the hospital at the time, and they, with the fine help of the nursing staff and other staff members promptly put into operation a smoothly operating evacuation procedure. All Montreal fire departments and the emergency services of all other hospitals in the city as well as the recently reactivated Civil Defence Organization were promptly on the spot. As the result of this total effort there were no injuries

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recorded to any one. The entire east wing was promptly evacuated and most patients conveyed under excellent conditions to the various hospitals throughout the city.

Recently quite an achievement was attained by a group of our colleagues. The Jean Talon Hospital in Montreal is now in the midst of a drive for $3,000,000 construction fund. This is to go towards the construction of a new ten-storey wing. The attending physicians at this hospital have contributed a total of $200,000 towards this fund—probably a record for our profession in contributions to a regional hospital drive.

This hospital has also recently appointed Dr. L. P. Nelligan as chief surgeon. He is a graduate of McGill University and had been in charge of surgery at St. Mary's Hospital and on the attending staff in surgery at the Royal Victoria Hospital.

It is a great pleasure to note that the University of Montreal at its spring convocation on May 29 conferred on Dr. James B. Collip an honorary degree in medical sciences. Dr. Collip, dean of medicine and head of the department of medical research at the University of Western Ontario, is also the man under whom your reporter received most of his postgraduate training—a memorable and thorough course.

The Montreal General Hospital has recently named three doctors to the rank of senior surgeon on the hospital staff. They are Drs. Fraser N. Gurd, Eric A. MacNaughton and F. M. Woolhouse. These appointments are part of the reorganization of the department of surgery at the hospital following recent promotion of Dr. Rocke Robertson to surgeon-in-chief.

A. H. NEUFELD

NOVA SCOTIA

Dr. Murray Fraser of Halifax has been named President-elect of the College of General Practice of Canada. This nomination took place at the April meeting of the College in Toronto. He will assume office in April 1960.

Three Dalhousie University cancer research workers, Dr. J. A. McCarter, Dr. W. I. Morse and Dr. S. D. Wainwright, have been granted a total of $20,690 in cancer research grants and fellowships for 1959-60 by the National Cancer Institute of Canada.

Dr. McCarter will receive $10,300 for studies in epidermal carcinogenesis, Dr. Morse $5300 for studies in œstrogen metabolism in carcinoma of prostate, and Dr. Wainwright $5000 for studies in mechanism and genetic control of protein biosynthesis.

Mr. W. Stanley Lee was re-elected president of the Children's Hospital board of management, at a meeting of that group following the 48th annual meeting, held in the nurses' residence.

During his remarks, Mr. Lee pointed out the tremendous problem of paying off the back deficit of the Children's Hospital. This deficit, shown for the 13 months' operation ended December 31, 1958, amounts to the large sum of $224,000.

A feature of the meeting was the presentation of a scroll to Dr. Gordon B. Wiswell, paying tribute to his 36 years' association with the services of the hospital. For the past ten years he has been physician-in-chief for medical services, a post from which he is now retiring.

Seven Halifax and Dartmouth doctors attended the recent sectional meeting of the American College of Surgeons in Montreal. Drs. Saul Green, Fred J. Barton, W. A. Curry, Harry D. O'Brien, Edwin F. Ross, J. A. Noble and Leo Green were among the thousand delegates from Canada and the United States. Dr. O'Brien presided over one of the general surgical sessions, and Dr. Ross spoke on neonatal intestinal obstruction.

Drs. Hereford Still, Ian MacGregor and J. W. MacIntosh, Jr., have been appointed as staff physicians to the out-patient department of the Victoria General Hospital. This appointment carries with it the obligations and privileges of staff meetings. This is the first time that general practitioners have been so honoured in the Victoria General Hospital.

Dr. Michael Thomas Casey has been appointed to the surgical staff of the Victoria General Hospital as an Assistant Surgeon. Dr. Casey was born in New Aberdeen, Cape Breton, and graduated from Dalhousie Medical School in 1953. His internship was spent in the Victoria General Hospital and he had one year of postgraduate surgical training in this institution. In 1954, Dr. Casey was appointed to the resident intern staff at Bellevue Hospital, New York, at which he spent the next four years in postgraduate training. He received his F.R.C.S. (Canada) in 1958.

WALTER K. HOUSE

PRINCE EDWARD ISLAND

Dr. Temple Hooper of the Division of Cancer Control has been granted leave of absence for one year for postgraduate study in radiation therapy in Saskatoon. Dr. and Mrs. Hooper have taken up residence in that city.

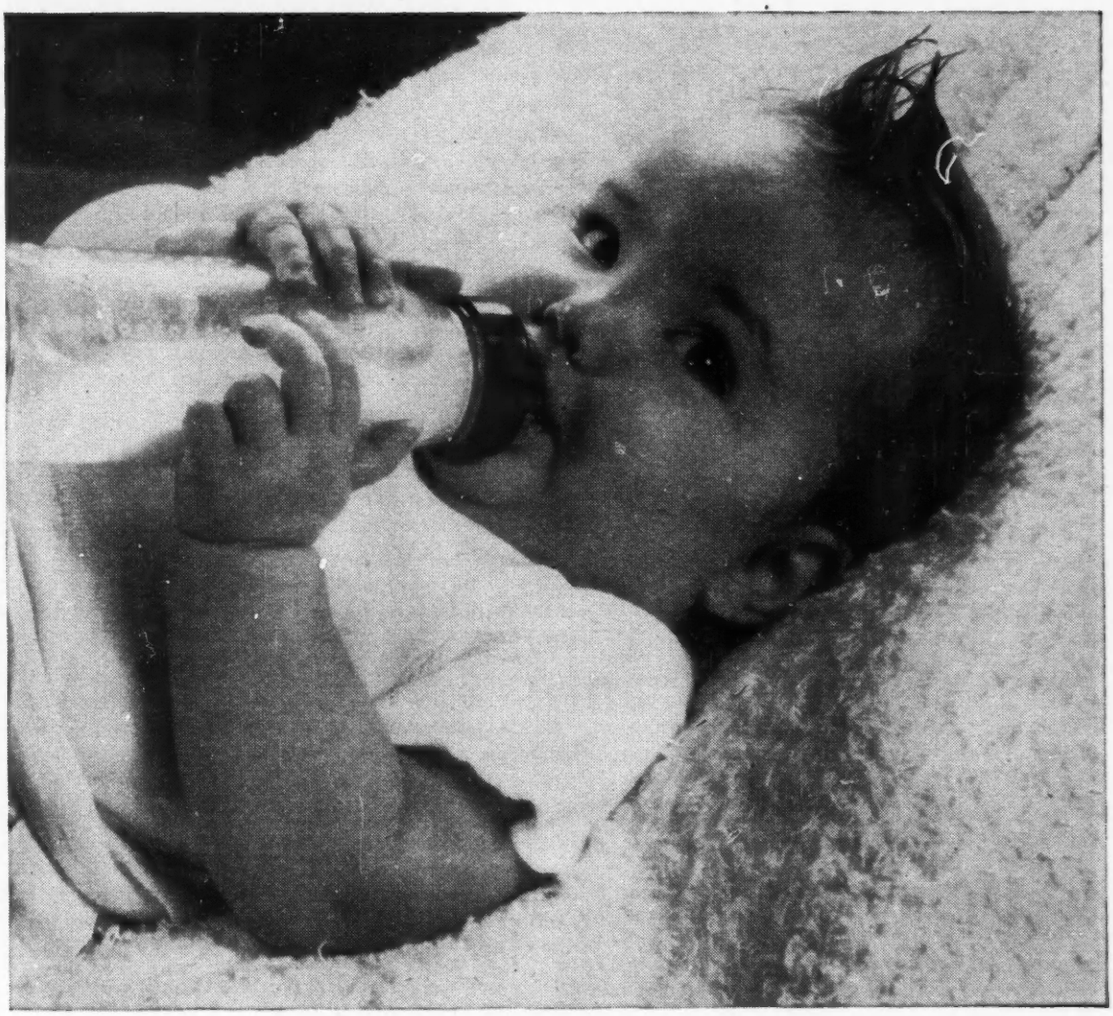
Dr. E. Kassner of Souris, who was elected president of the College of General Practice, Prince Edward Island Chapter, represented the Division at the recent annual meeting of the College of General Practice in Toronto.

It has been recently announced that Drs. Wilfred Callaghan of Summerside and R. Harold Stewart, Charlottetown, have been awarded scholarships through the College of General Practice for the year 1959. Both doctors will do postgraduate study during the present year.

At the general meeting of the Medical Society of Prince Edward Island at the Charlottetown Hotel on May 14, Dr. Victor Johnston, executive director of the College of General Practice of Canada, was the guest speaker. The executive and program committee of the Society had previously met on May 13 at the Polyclinic to plan the clinical program for the 1959 annual meeting.

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BOOK REVIEWS

CARDIAC ARREST AND RESUSCITATION. Hugh E. Stephenson, University of Missouri School of Medicine, Columbia, Mo. 372 pp. Illust. The C. V. Mosby Company, St. Louis, 1958. $12.00.

Since the advent of anæsthesia just over a hundred years ago, surgery has made enormous strides, but not without cost. With the introduction of chloroform, fatalities due to cardiac arrhythmia or arrest began to be reported almost at once. Ever since, attempts have been made to prevent this catastrophe or to restore normal heart action, with only sporadic success. The appearance of several publications in this field testifies to the increasingly intense interest and research being applied to this most distressing problem. The author, who has the help of several contributors, is well qualified to add to their number.

The circumstances under which arrest occurs and its frequency are discussed in some detail. One chapter is devoted to its diagnosis and is followed by a chapter on the etiology. The management, including drug therapy, massage, defibrillation and stimulation, is taken up in detail. The dangers and complications of attempts at resuscitation are reserved for another chapter. The prognosis and the late sequelæ also come in for comment. The most important section, on prevention, is also one of the shortest. Perhaps this fact indicates where the need for knowledge is the most acute. Inadequate oxygenation, unfortunate choice of the anæsthetic agent and the employment of too many drugs in too large quantities, are undoubtedly important factors in cardiac arrest. It is well to remember that these factors are under our control.

This volume merits careful perusal by anæsthesiologist, surgeon, cardiologist and anyone intimately involved with the operating room.

LUNG FUNCTION TESTS. B. H. Bass, London Hospital, England. 72 pp. Illust. H. K. Lewis & Co. Ltd., London, 1959. 8s. 6d. net.

Tests of lung function are being used with increasing frequency in clinical medicine. This subject has usually been dealt with in highly technical research reports and monographs, and as a result doctors seeking information about the tests have soon become discouraged. Dr. Bass, in his short book (it can be read in a single evening), deals with tests of pulmonary function simply and clearly. He discusses in an easily understood manner, ventilation, gas exchange and mechanics of breathing. The chapter on the mechanics of breathing is especially recommended. The illustrations are noteworthy for their simplicity and clarity. Emphasis has been placed on the easily performed tests of ventilation and the value of fluoroscopy.

Minor criticisms are: the unnecessarily detailed account of the techniques for measuring functional residual volume, the lack of clear distinction between restrictive and obstructive ventilatory defects, and lack of discussion of the response of the arterial oxygen saturation to exercise. The complete absence of references is a serious omission.

This book should stimulate further reading and encourage the setting up of some of the simpler techniques, but this is made difficult by the lack of references. Dr. Bass's book fulfils a definite need and is highly recommended for those who wish to take the first steps in the exploration of the complex field of tests of respiratory function.

EVOLUTION OF THE SPEECH APPARATUS. E. Lloyd DuBrul, College of Dentistry, University of Illinois, Chicago. 103 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $5.25.

This monograph is not easy to read and is hardly a work for the beginner. To fully comprehend its content and implications, one needs to "straddle the fields" of biology, cybernetics, anatomy, functional neuroanatomy and anthropology, as well as to be conversant with the theories of speech and language. Although this critic does not feel particularly competent to review the work in all its aspects, the monograph may be recommended as a thoughtful and stimulating publication. It is well illustrated and documented and provides a splendid bibliography.

The author has a complex style, often with much meaning behind some of his brief statements, such as "invertebrates are inveterate in the tendency to aggregate"; "the more complex the animal, the more complex are not only its movements, but its responses to movements of others, all of which complicates the mode of congregation"; "a group of similar animals tend to minimize for each other the disturbing effects of unusual surroundings". The work attempts a holistic approach to the problem of speech and language origin and evolution, but in the main emphasizes anatomical and physiological evidence and ignores or does not fully explore some other important aspects of the problem.

The main thesis is that of Williston's Law, quoted by the author and applied to speech development: "And it is also a law in evolution that the parts in an organism tend toward reduction in number, with the fewer parts greatly specialized in function, just as the most perfect human machine is that which has the fewer parts, and each part most highly adapted to the special function it has to subserve." The notion is offered that in the individual animal, the special reduction of repetition of parts serving the same function has yielded more complex animals. In man, the hands were freed from locomotion, so that the forelimbs changed as they became wholly used for the new function of food getting, preparing and feeding. In so doing, the forelimbs freed the oral structure from their previous task of obtaining food and hence made the oral mechanism available for the purpose of speech. The author maintains that "as it is a feeding apparatus that is taken over by speech, the posturings and operations of speech are those of the feeding movements . . . Food flows into the stomach but air flows out of the lungs. Speech production is only a difference in direction of fluid flow." When man came to adopt the upright posture, changes of the skull, jaws, mouth muscles and pharyngeal relations also assisted in making the oral channel available for sound production.

Changes in behavioural patterns bring about anatomical and physiological changes and these changes bring about further behavioural changes. Quoting Carpenter, the author states: "All behaviour, including that called cultural, has anatomical and physiological counterparts . . . Through learning, for example, modifications may result in the organism, particularly in submicroscopic structure of the brain, which persistently modify the animal's subsequent behaviour and social reactions." In this way, new behaviour patterns in man were established. "Changes in the brain can cause

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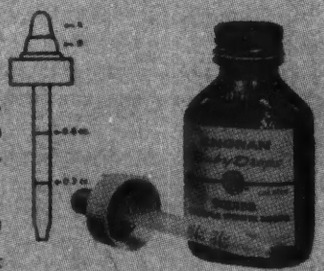
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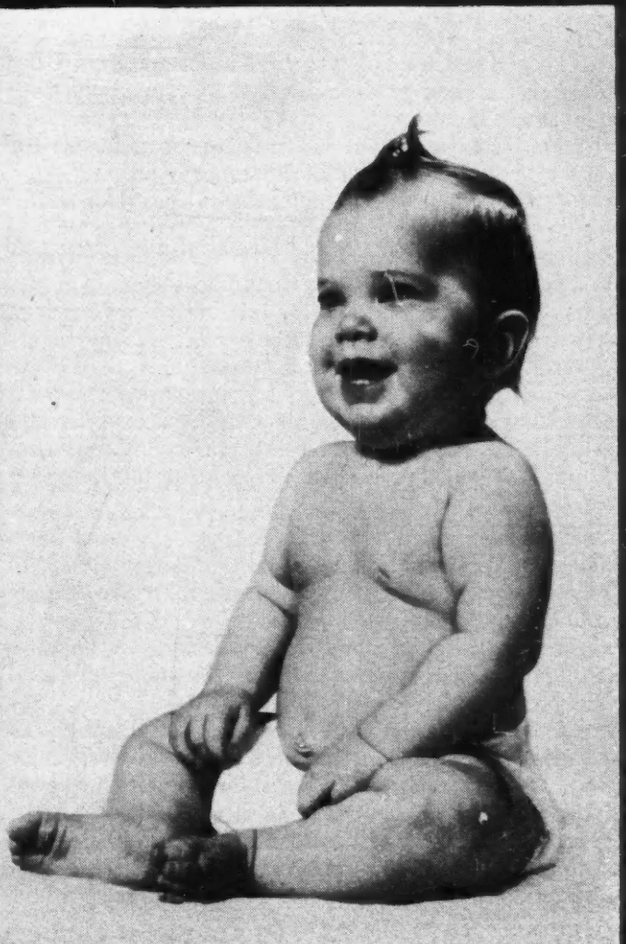


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a shift in neural control of peripheral parts in animals with brains large or complex enough. In man, by fortuitous chance, changes in the brain concomitant with adjustments to posture permitted a shift in the feedback mechanism that dominated oral movements." From this accident, speech was made possible. In other words, this monograph adopts the thesis and offers evidence of comparative functional anatomy to support the concept that, as animals evolved, anatomical and physiological adaptations occurred in man which made possible the utilization of the oral mechanism for speech purposes.

Animals shift from aggressive to cooperative action, and the mode of this integration is a communication of intent by signal, sign, or gesture. The author makes a distinction between speech and language but in definition says, "Speech retains more explicitly than language the fundamental suggestion of articulate or vocal utterance. Speech is the event of codifying a thought in sets of controlled connected sounds," and furthermore, to the author, speech means "that reverberating circuit of activity that integrates the human social unit". With regard to language, Locke is quoted, "The association of image and sound is said to be intrinsic. Language is its extrinsic symptom."

"Speech is first a morphologic problem. Morphology is a historic problem. Speech has usually been studied as if it could be settled by itself, but an attempt is made in this monograph to show that the story of speech is inextricably bound up with the origin and evolution of man."

PRACTICAL BLOOD GROUPING. F. Stratton and P. H. Renton. 330 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $10.75.

The specialized field of the human blood groups has been well served in recent years by the appearance of a small number of excellent textbooks. The latest addition, *Practical Blood Grouping*, is one of the most welcome, for both its authors are well known for their contributions to the literature, and their transfusion centre is generally regarded as being among the foremost in England. Dr. Stratton and Dr. Renton do more than describe the methods which, over the years, they have found most suitable or with which they are most familar: the pitfalls that surrounds each test are granted a chapter to themselves as well as numerous mentions throughout the text; case reports clearly emphasize many of the important points; and chapters on antigen-antibody reactions and on complement in blood grouping are not to be found in comparable works.

All aspects of blood grouping are covered, both theory and practical applications. The determination of the ABO groups and the organization of large-scale ABO grouping are very detailed, as are the descriptions of the Rh groups and the organization of an antenatal service. Cross-matching and the difficulties that may be encountered receive adequate attention. The procedures for the identification of atypical antibodies are given a chapter to themselves and are well illustrated by case reports. The chapter on statistical considerations in the identification of antibodies and the description of the statistical control of large-scale ABO grouping are most informative. There is an excellent description of the anti-globulin test and the false results that can follow its use. Apart from the text there are over 100 useful tables and over 20 plates and figures; the plates in particular are of interest because many of them illustrate the appearance of different kinds or degrees of agglutination in a highly original manner.

This is a most useful book. It puts tests, controls, and the chance of error in their proper perspective. It is eminently practical, and is highly reccommended to all engaged in blood grouping.

THE ABO BLOOD GROUPS: COMPREHENSIVE TABLES AND MAPS OF WORLD DISTRIBUTION. A. E. Mourant, Ada C. Kopec and Kazimiera Domaniewska-Sobczak. 276 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $10.25.

The subtitle of this book is important. The ABO blood groups hold many problems for many disciplines, but unless it is realized that this book comprises "Comprehensive Tables and Maps of World Distribution" with no text apart from an introduction and a large bibliography, the reader may well be disappointed. In his earlier work, *The Distribution of the Human Blood Groups*, Dr. Mourant described the different blood group systems, and then gave their distribution among the races of man before attempting to show how they may have arisen in the first place and how they may have reached their present complex distribution. The literature on the ABO blood groups dwarfs that of all the other blood group systems combined, so that much of this information could not be contained in the earlier work. The present volume remedies this deficit, and presents all data published to the end of 1957 on the frequency of the ABO groups in human populations.

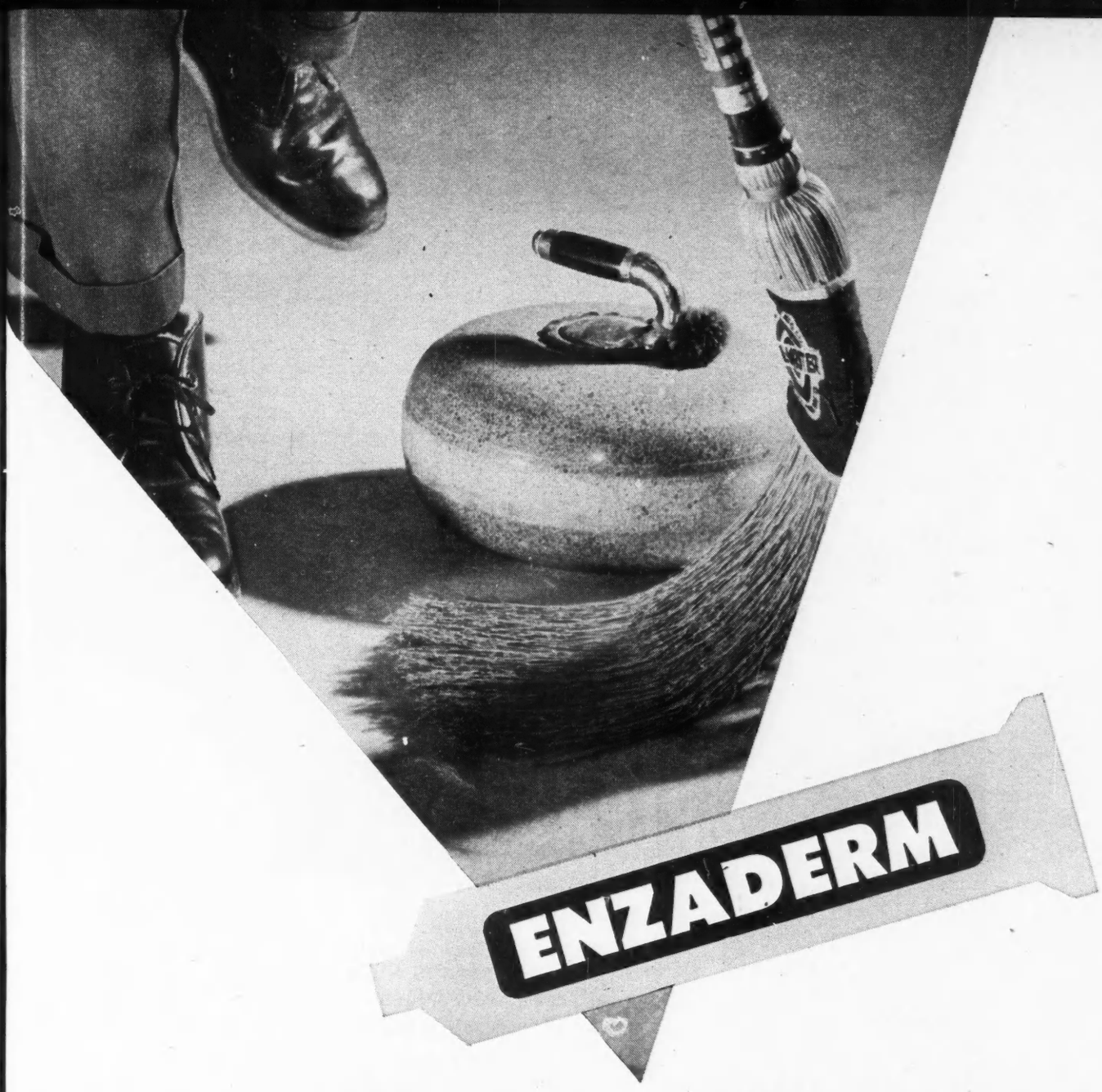
As the definitive source-book on this subject, this work will prove invaluable to anthropologists, human geneticists, and to all who work on the fringes of these fields.

OCCUPATIONAL ALLERGY. European Academy of Allergy. 329 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $12.00.

This book consists of a series of lectures held during a course on occupational allergy at The Hague in May 1958, organized by the Netherlands Society of Allergy, and under the auspices of the European Academy of Allergy. It consists of 38 chapters, each chapter a lecture by one or two specialists in a particular field of occupational allergy, and covers such subjects as occupational and industrial asthma, nasal affections as occupational diseases, occupational allergic affections of the eye, kapok allergy, allergy to oil of turpentine, occupational dermatosis of the housewife, skin hazards in the wool textile industry, occupational allergy in the baking profession, asthma among mine workers, allergic reactions in nurses, occupational allergy in printers, and allergic reactions in cigar factory workers.

In each case, the subject matter is well presented, and there is information of use to the industrial physician, allergist or dermatologist, although this book is of little or no interest to the general practitioner. A very serious disadvantage is the absence of an index other than a list of contents, so that it has very limited value for purposes of reference. It therefore lacks the advantages which a textbook usually has for ready reference by a busy physician.

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(Continued from page 1026)

FUNGOUS DISEASES AND THEIR TREATMENT. Edited by R. W. Riddell and G. T. Stewart. 256 pp. Illust. Butterworth & Co. Ltd., London and Toronto, 1958. $9.00.

This interesting volume records the proceedings of a recent symposium held at the Institute of the Diseases of the Chest, Brompton Hospital, London, England. It is an up-to-date review of the complex question of superficial and systemic fungus diseases including the histopathology, pathogenesis, epidemiology, clinical description of some of the entities, and treatment. There are chapters of interest to the dermatologist, internist, gynæcologist, pædiatrician and pathologist, so that a wide field of medical practice is included in the discussion of different subjects. One reads with particular interest the evaluation of the new and old therapeutic agents in mycotic diseases, and agrees with the editors' note that a more critical study is required of the mode of action of the few effective drugs.

The volume is well printed and illustrated; one regrets, however, the absence of colour illustrations, especially when different staining techniques are described. It is not a textbook of mycology, a few selected important subjects being extensively covered, but would be a welcome addition to any medical library as a work of reference.

A COMPENDIUM OF RESEARCH AND THEORY OF STUTTERING. Charles F. Diehl, University of Kentucky. 314 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1958. $10.75.

This publication is not just an annotated bibliography. It may truly be claimed to be a compendium because it abstracts 193 published works and contains in addition an extensive reading list. It therefore includes all the details necessary to a comprehensive knowledge of the subject, presented in such a way as to make for interesting and easy reading.

Stuttering, as the author says, is an enigma, and the voluminous literature available on the subject is in itself an obstacle to the student. The compendium assists tremendously in surmounting this difficulty, but it does more than that, because the publications abstracted have been systematically divided into five main areas: history, symptomatology, etiology (physiological), etiology (psychological) and therapy. Furthermore, each publication abstracted has itself been divided into four subdivisions: purpose, experimental design, summary and conclusions. The total effect is that each section has been so arranged in sequence that it develops a theme; this minimizes confusion and facilitates comprehension while preserving scientific accuracy.

If any negative criticisms might with justification be made at all, one might observe that the abstracted publications are confined to the English language and to American publications in particular. Some British publications might have been included, and indeed some representative foreign-language publications might have been translated as well, although in defence of the author it should be mentioned that a reading list of foreign publications has been included. Perhaps the work might also have been enhanced if each section had been concluded with a summary or critique, but again the author has purposely and perhaps wisely refrained from doing just this in such a controversial area, for he says "final conclusions" are left "entirely to each reader".

In summary, this is an excellent publication, and highly recommended to speech pathologists, psychologists, psychiatrists and physicians generally, especially to the latter, who are still prone to indulge in the common and somewhat naïve notion that stuttering is but a symptom of an underlying neurosis, and therefore removal of the neurosis (however that is accomplished) will automatically remove the stuttered speech difficulty. Unfortunately, as this compendium of research and theory will demonstrate, the disorder is a much more complex problem than that.

DIE HERZ-INSUFFIZIENZ IN DER PRAXIS (Cardiac Failure in General Practice). Kurt Bloch. 216 pp. Illust. Georg Thieme Verlag, Stuttgart; Intercontinental Medical Book Corporation, New York, 1958. $4.70.

In the first part of this monograph the author gives a short review of the normal and pathological anatomy and physiology of the heart, and also describes some of the biochemical processes taking place in the myocardium. In the chapters that follow there is a discussion of symptoms and signs in various clinical conditions resulting in cardiac insufficiency.

The second part of the book is devoted to a description of diagnostic methods. Physical diagnosis is discussed in detail, but radiology, electrocardiography and function studies are mentioned only briefly.

The final chapters are devoted to the treatment of cardiac insufficiency. Digitalis therapy and the use of diuretics are dealt with extensively. Unfortunately, some drugs are mentioned by their trade names only and not by their chemical composition. The significance of rest and graduated exercise, diet and climate for the patient with heart disease is briefly discussed.

The bibliography contains references from the new European as well as American literature up to 1958. The book can be recommended to all German-reading physicians interested in the subject.

COURTROOM MEDICINE. Compiled and edited by Marshall Houts, Judge, General Counsel to the Court of Last Resort. 511 pp. Illust. Charles C Thomas, Springfield; The Ryerson Press, Toronto, 1958. $15.50.

This book, its subjects chosen at the request of lawyers who had been asked on what medical subjects they needed information most, is a compendium of medicine written for lawyers by 26 doctors. There are two short chapters on doctors as expert witnesses, one on medical examination and one on anatomy; the others are on common diseases or injuries, discussed — broadly — by systems. The titles cover so wide a range of subjects which are summarized so briefly that they would contribute little to a doctor's knowledge of medicine, though probably they would be informative to lawyers who need some general medical knowledge. Many of the chapters have short discussions of medico-legal aspects of the subjects, but these again are summarized too briefly to convey much information.

One gains the impression that the writing and editing were hurried; a few errors of spelling have gone uncorrected, and two figures have the same legend; even for the first edition there are more distracting slips than there should be.

The book may fulfil its purpose of helping lawyers to prepare cases that deal with medical matters — its avowed purpose — but has little value for doctors.


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NOTE: To avoid the publication of misleading information, all advertisers under the classification "Practices" in the Canadian Medical Association Journal should furnish the following information:

Population of community and surrounding territory served.

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Whether or not an introduction of at least two months' duration may be afforded a prospective purchaser.

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MONTREAL INSTITUTE OF CARDIOLOGY.—1. Two surgical internships available in cardio-vascular surgery. Applicant must have completed at least one year of rotation. Appointments valid for six months renewable. 2. Surgical resident. Applicant must have completed at least three years of general surgery and preferably one year of thoracic surgery. Appointments valid for one year renewable. 3. Internship and residency in cardiology for one or two years. Applicants must have completed at least one year of medical internship. 4. Research fellowship in experimental cardio-vascular surgery. Appointments for one year. Details on request. Approved by Royal College of Physicians and Surgeons of Canada for training in thoracic surgery (one year) and cardiology (one year). Application forms on request from Medical Director, Institut de Cardiologie de Montreal, 5415 Boulevard de l'assomption, Montreal 36, Quebec.

ST. LUKE HOSPITAL, in Montreal, capacity 451 beds, is considering applications for internship or residency in the different services or a general hospital. The institution is approved with full accreditation by the Joint Commission on Accreditation of Hospitals. The Royal College of Physicians and Surgeons of Canada approves for advanced graduate training the following specialities: anæsthesia, general surgery, internal medicine, orthopædic surgery, otolaryngology, pathology, radiology (diagnostic) and radiology (therapeutic). Applicants may address their applications to: Dr. H. I. Tetreault, Medical Superintendent.

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FELLOWSHIP IN EXPERIMENTAL CARDIAC SURGERY. Available July 1st, 1959 for medically qualified applicant. Salary $3000 per year. Apply: A. M. Rappaport, M.D., Charles H. Best Institute, University of Toronto, Toronto 5, Ontario.

MEDICAL NEWS *in brief*

(Continued from page 994)

FELLOWSHIP IN MEDICAL NEOPLASIA

Memorial Center, New York, is a training center affiliated with Cornell University Medical College. Specializing in cancer and allied diseases, it participates actively in teaching at both undergraduate and graduate levels. It has a fully approved residency program in internal medicine, and, in addition, offers special fellowships for study to a limited number of graduate physicians. These are designed to offer physicians trained in internal medicine the opportunities available at Memorial Center to study the natural history, diagnosis, complications, pathogenesis and pathologic physiology, pathology and treatment of cancer, with particular emphasis on the leukæmias, lymphomas and allied diseases, and to undertake an active supervised clinical investigation of interest to the service and the fellow in the field of medical neoplasia (non-surgical cancer and palliative therapy of patients with malignant tumours).

The fellow will carry out clinical or clinical and laboratory study of an approved or assigned problem under reasonable guidance and supervision, attend a weekly service teaching conference and medical grand rounds, be assigned to various departments, and have a unique opportunity to see and study the management of large numbers of patients with lymphomas, leukæmias and allied diseases.

Candidates must be graduates of recognized A.M.A.-approved medical schools, and must have completed or be in process of completing two years of postgraduate training in internal medicine in addition to one year of internship. The salary stipend is $6000 per annum without maintenance. The fellowship appointment is for one year normally beginning July 1, renewable for one or two years for select individuals who develop a special interest in some problem. Applicants should apply in writing to: Henry D. Diamond, M.D., Chief, Lymphoma Service, Department of Medicine, Memorial Center for Cancer and Allied Diseases, 444 East 68th Street, New York 21, New York.

—

VITAMIN B_{12} AND DIABETIC RETINOPATHY

In 1953, Becker and his colleagues suggested that there was an abnormality of vitamin B_{12} metabolism in diabetics. They stated that in patients with retinopathy, urinary excretion of vitamin B_{12} was abnormally high, whereas in diabetics without retinopathy excretion was subnormal. Suggestions have been made from time to time since then that vitamin B_{12} was helpful in the treatment of diabetic retinopathy.

Keen and Smith of London, England (*Lancet*, 1: 849, 1959) performed a controlled trial of vitamin B_{12} treatment on 25 diabetic patients with mild retinopathy, making drawings of the affected fundus at eight-week intervals over a period of about 48 weeks. A double-blind trial was conducted, one member of each group being given 50 μg. of vitamin B_{12} by mouth three times a day during the trial period, and the other a blank tablet. The study failed to show any effect of vitamin B_{12} given by mouth upon the

(Continued on page 60)

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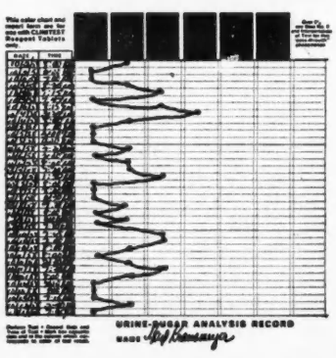
What differentiates "renal diabetes" (renal glycosuria) from diabetes mellitus?

Blood sugar levels. In renal glycosuria they are normal; in untreated diabetes, fasting blood sugars are usually 130 mg.% or over and postprandial levels 170 mg.%, or more.

Source: Joslin, E. P.; Root, H. F.; White, P., and Marble, A.: The Treatment of Diabetes Mellitus, ed. 9, Philadelphia, Lea & Febiger, 1952, pp. 701-702.

A "URINE-SUGAR PROFILE" FOR CLOSER CONTROL

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*GP 16:121 (August) 1957.

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MEDICAL NEWS *in brief*

(Continued from page 48)

course of diabetic retinopathy, but it emphasized the value of a method focusing attention on the fate of individual lesions in a retinal segment.

—

COD LIVER OIL AND SERUM CHOLESTEROL

It is now a well-known fact that the cholesterol content of the blood is greatly influenced by the amount and kind of dietary fat. Relatively unsaturated vegetable fats lower the serum cholesterol level, while the relatively saturated animal fats raise it.

De Groot and Reed (*Nature*, 183: 1191, 1959) studied the effects of cod liver oil and some of its fractions on serum cholesterol in rats. The latter were given a basic diet tending to raise cholesterol level, and various fractions of cod liver oil were added in different group experiments over a period of four weeks. Results showed that cod liver oil lowers cholesterol levels better than corn oil does, and that the fatty acid fraction accounts for most if not all of this activity.

—

DIABETES INSIPIDUS AND HYPOTHYROIDISM

In a recent note on the treatment of diabetes insipidus, Maranon of Madrid (*Bol. Instit. Patol. Méd.*, 14: 61, 1959) draws attention to the various methods of treatment, and in particular to the use of drugs producing hypothyroidism. Thyroid insufficiency is usually associated with oliguria, while hyperthyroidism is often associated with polyuria. In a number of cases he has tried one of the antithyroid drugs, Vincidol or dimethyl-5:5-dithio-2,4-hydantoin, a drug which was originally used for epileptics. He regards this drug as the antithyroid drug of choice, if it were not for the ease with which it produces minor side effects. He feels that its antiepileptic action is associated with the production of hypothyroidism, in which state epilepsy is very rare. Results were not however uniform, and the concomitant production of myxœdema is a drawback.

—

FULMINATING ECLAMPSIA TREATED BY HYPOTHERMIA

A woman in the 35th week of pregnancy was admitted in coma and having fits. On admission, the fits were clonic with persisting spasm between attacks, and there were bilateral orbital œdema and swollen ankles and albuminuria, though blood pressure was not significantly raised. Cæsarean section was performed on the same day, but contrary to expectation the mother did not recover consciousness after operation and continued to have one fit every hour or so. Her condition deteriorated and it appeared that she would die as a result of the vicious circle: cerebral anoxia — fits — further anoxia.

The authors (*Lancet*, 1: 863, 1959) therefore decided to treat the patient as they would a case of head injury in coma. The three requisites for such treatment are tracheotomy, hypothermia and intravenous therapy. Tracheotomy was performed under gas oxygen and Fluothane. A transfusion con-

(Continued on page 62)

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MEDICAL NEWS *in brief*

(Continued from page 60)

taining meperidine, chlorpromazine and promethazine in saline was administered intravenously and the patient was cooled by exposure to cold air from an electric fan. Fits ceased soon afterwards, and the patient recovered consciousness 20 hours after commencement of cooling, at which time her rectal temperature was 92° F. Further cooling was stopped and recovery was uneventful.

—

NEW GRADUATE COURSE IN NUTRITION IN THE UNIVERSITY OF TORONTO

The School of Hygiene, University of Toronto, now offers a new postgraduate course in nutrition leading to a Diploma in Nutrition. This new course has been planned to provide advanced training in nutrition, in public health administration, and in related subjects, to equip graduates in medicine to serve as nutrition specialists with health departments and, more especially, with international bodies such as the World Health Organization. Considerable emphasis will be given in this new course to field work to provide practical experience in studies of nutrition status and in methods of improving nutrition.

This course will correspond in academic standing to the Diploma in Public Health course, available for many years in the School of Hygiene, and to the Diploma in Bacteriology course, recently instituted in the School of Hygiene. The Diploma in Nutrition course will extend through one academic year and will begin on September 11, 1959.

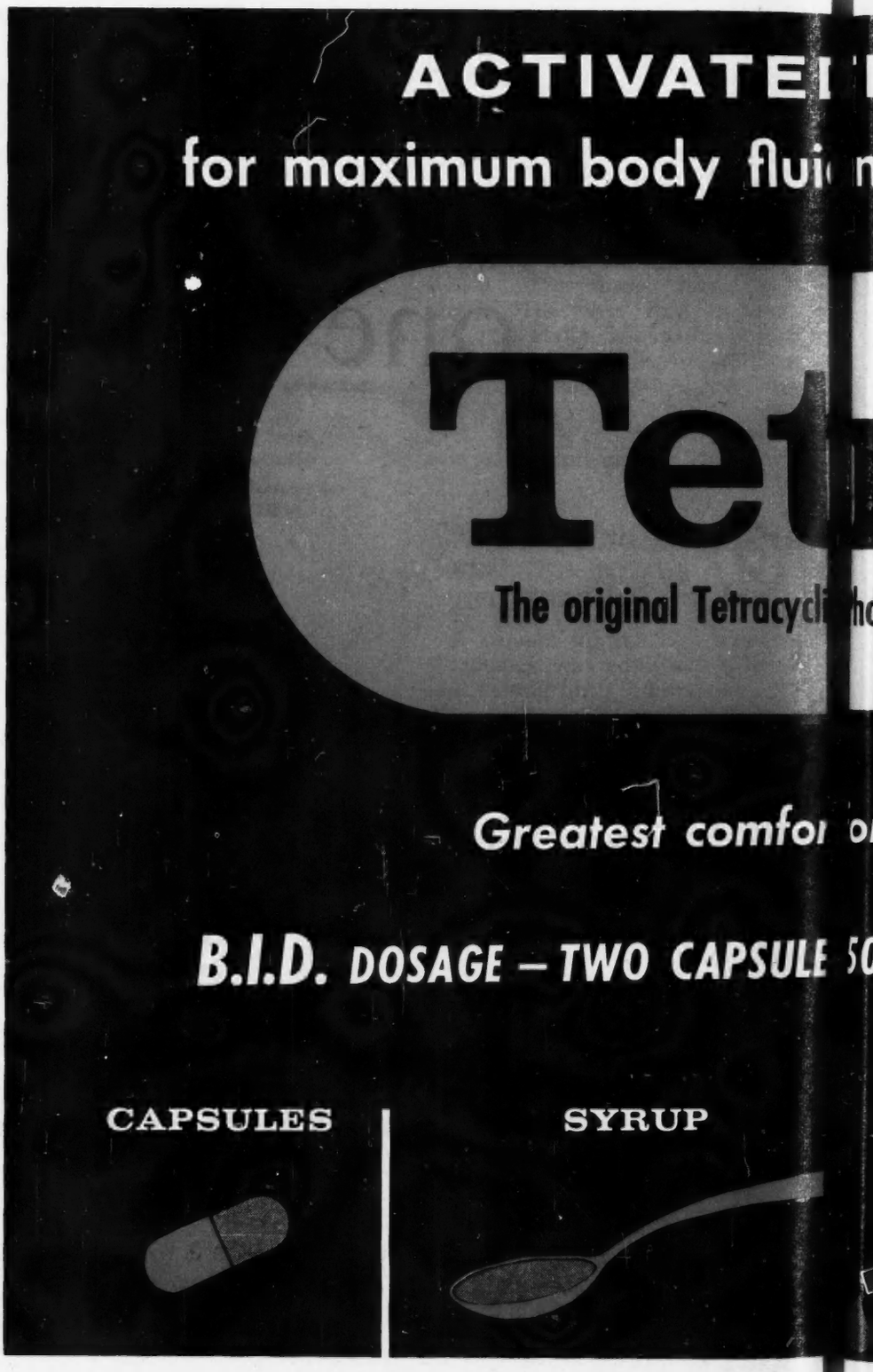
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BRITISH CARDIAC SURGEONS IN MOSCOW

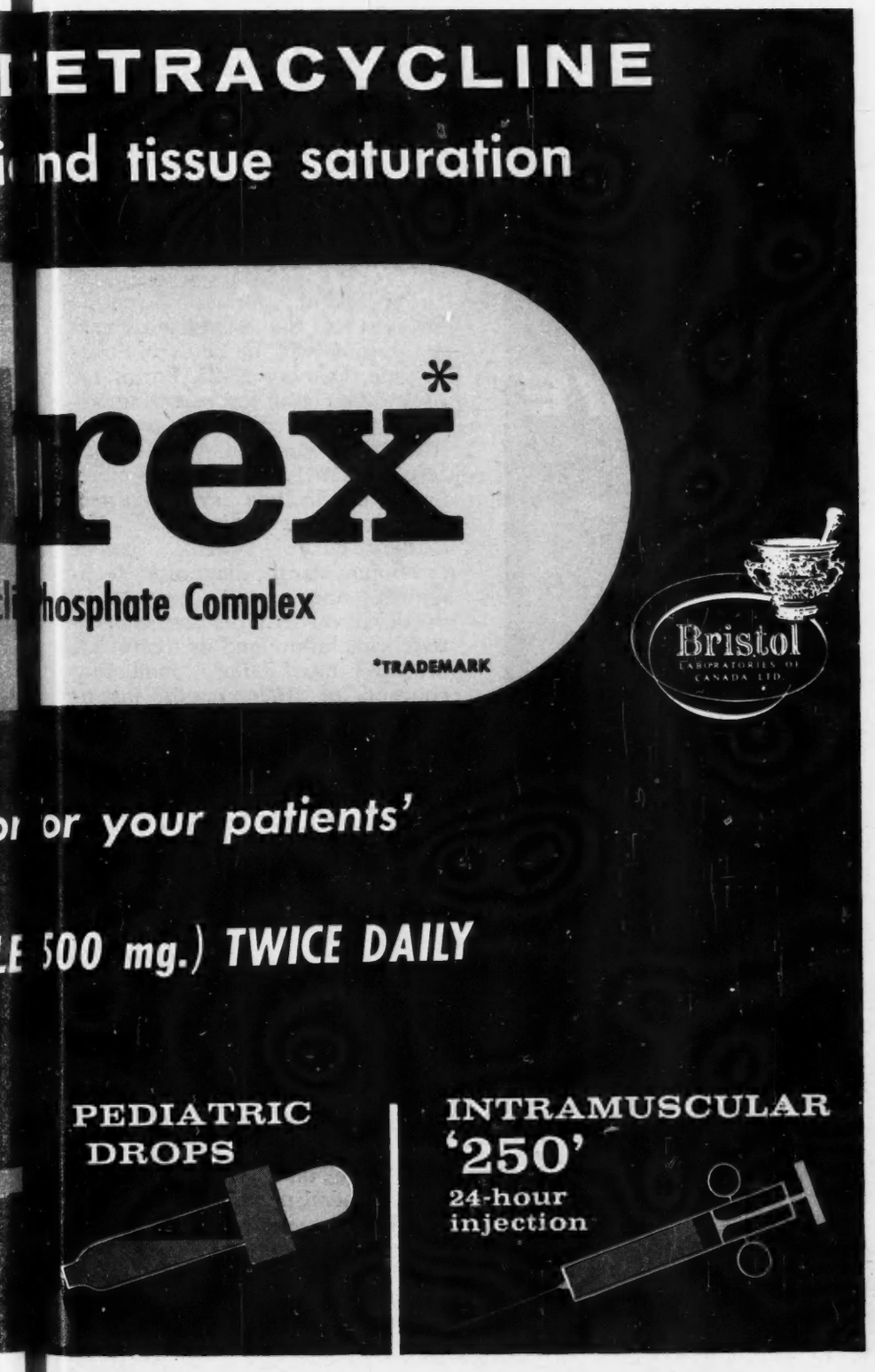
In May, a team of six British surgeons and an operating room nurse visited Moscow and demonstrated some cardiac operations to Russian colleagues. They operated on several cases of septal defects, using a heart-lung machine invented by Dr. Melrose. The British team was led by Mr. William Cleland, and demonstrations were given in Moscow on closed-circuit television. The team were also shown demonstrations by Russian surgeons of new instruments for suture of blood vessels, and it is possible that a team of Russian surgeons may visit England to demonstrate vascular surgery. Directly after the British visit, a delegation from the Medical Workers Union of the U.S.S.R. came to London to study the British National Health Service in action. — United Kingdom Information Service, Toronto.

PROCLORPERAZINE IN MENTAL ILLNESS

Over a 15-month period, proclorperazine (Compazine) was tested out on 100 in-patients and 50 out-patients suffering from various chronic psychoses, psychoneuroses and personality disorders characterized by tension states. About two-thirds of the group had received previous treatment with another tranquillizer or ECT but



had failed to show or maintain improvement. Most of the patients were given oral proclorperazine in doses of 10 to 25 mg. twice or thrice a day, with gradual increase until clinical improvement was achieved or side effects appeared. For rapid control of agitation and excitement, the drug was given intramuscularly, 10 to 20 mg. every three to five hours for a period of one to 10 days. Sustained-release capsules were also used. The average daily dose for psychotics was 100 mg. and for neurotics 30 mg. Average duration of treatment was five months. The commonest side effects were parkinsonism and turbulence, while 18 patients showed a paradoxical reaction and had to discontinue the drug. The parkinsonism was controlled by antiparkinsonian drugs. In reporting this series Riesenman and Pettit (*Am. J. Psychiat.*, 115: 1032, 1959) suggest that the drug is intermediate in clinical effectiveness between chlorpromazine and meprobamate, although it is sometimes more effective than either. It had the advantage over chlorpromazine of producing much less drowsiness and lethargy. It seemed to work much better in the milder and latent psychotics and in neurotics, facilitating ventilation and lifting repression. Approximately 60% of the combined group were made more accessible, amenable and receptive to psychotherapy.



CANADIAN HEADS AMERICAN PHARMACEUTICAL ORGANIZATION

Dr. Austin Smith, formerly editor of the *Journal of the American Medical Association*, has been appointed the first full-time president of the newly formed American Pharmaceutical Manufacturers' Association. This association was formed by the merger of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association last year. Dr. Austin Smith is a graduate of Queen's University, and after graduation served as a member of the Department of Pharmacology there and later as lecturer in the Department of Pharmacology of the University of Chicago. He then had 18 years' service with the American Medical Association, resigning at the end of 1958.

COURSE IN POSTGRADUATE GASTROENTEROLOGY

The American College of Gastroenterology announces that its Annual Course in Postgraduate Gastroenterology will be given at The Biltmore in Los Angeles, Calif., on September 24, 25 and 26, 1959. The faculty for the course will be drawn from the medical schools in and around Los Angeles. The course will cover advances in diagnosis and treatment of gastro-intestinal diseases (medical and surgical). There will be a clinical session at the College of Medical Evangelists and this year, in addition to individual papers, there will be several panel discussions of interest. For further information and enrolment write to the American College of Gastroenterology, 33 West 60th Street, New York 23, N.Y.

(Continued on page 64)

MEDICAL NEWS *in brief*

(Continued from page 63)

TRIFLUOPERAZINE IN SCHIZOPHRENIA

A series of 110 female schizophrenics who had been ill for an average of five years and had failed to respond to previous treatment were started on one 5-mg. tablet of trifluoperazine (Stelazine) twice a day, the highest dose eventually given being 100 mg. a day. In 42 patients, a daily dosage of 20 mg. was sufficient to obtain an optimum effect. Kruse (*Am. J. Psychiat.*, 115: 1031, 1959) summarizes in a clinical note his results in this series after two to eight months of treatment. Response was obtained usually between the first and fourth week, and 20 patients had an excellent response, 58 a good response and 24 a fair response, while 8 were unaffected. The main side effect was parkinsonism in 90 patients, of whom all but 12 were relieved by the usual antiparkinsonian agents; 18 patients reported blurring of vision, and 6 became agitated. In a majority of cases, psychotic symptoms were alleviated, and patients who had been on other neuroleptic drugs were inclined to prefer trifluoperazine.



AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS

At its seventh annual clinical meeting in Atlantic City, April 6-8, the American College of Obstetricians and Gynecologists installed Dr. John I. Brewer of Chicago, professor of obstetrics and gynecology, Northwestern University Medical School, as its president in succession to Dr. R. Glenn Craig. The president-elect is Dr. C. Paul Hodgkinson of Detroit.

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AMERICAN HEART ASSOCIATION

The 32nd annual Scientific Sessions of the American Heart Association will be held in Philadelphia, October 23-25. Forms for registration and for reserving accommodation are now available from the Association, 44 East 23rd Street, New York, N.Y. The meeting will include symposia on regulatory mechanisms of the cardiovascular system, recent developments in diagnostic techniques, open heart surgery in acquired valvular disease, congestive heart failure and its treatment, life after heart failure, conflicting concepts of atherogenesis, instrumental methods in cardiovascular research, and cardiac resuscitation. There will be a joint program with the American College of Cardiology, and one of the scientific sessions will be jointly held with the Council on Arteriosclerosis.

—

PAN AMERICAN MEDICAL ASSOCIATION

The next Pan American Medical Association Congress will be held in Mexico City, May 2-11, 1960. The Association was organized in New York 34 years ago by a group of physicians to fulfil the need for interchange of medical knowledge and research in the western hemisphere, and has contributed to improved medicine through its inter-American congresses, seminars, and post-graduate scholarship program. The scientific program, through its 48

(Continued on page 66)

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MEDICAL NEWS *in brief*

(Continued from page 64)

medical sections, will include all branches of medicine and surgery, dentistry, hospital administration and medical education. New sections formed since the previous Pan American Medical Association Congress include Space Medicine, Hematology, Cancer Cytology, and a large section on General Practice. There will be many special panels, including Pharmacology and New Drugs; Mental Diseases; Nutrition; Relationship of Dentistry to Medicine; Cancer Research; Sudden Deaths; and Medical Press Relations. The Congress will also have scientific and commercial exhibits, medical motion pictures, and closed circuit television demonstrations of new techniques. Tours to the various medical institutions in Mexico City will be arranged by the Mexican Chapter of P.A.M.A.

Further information from Pan American Medical Association, 745 Fifth Avenue, New York 22, N.Y.

—

CIRRHOSIS IN WOMEN

Eighty-six instances of cirrhosis of the liver were found in 5515 necropsies on women at the Mayo Clinic. This represents an incidence of 1.6%. The most common type of cirrhosis in this study by Stuhler, Baggenstoss and Butt (*Gastroenterology*, 36: 467, 1959) was the postnecrotic (73 of 86 cases), which most commonly was due to viral hepatitis. Thirteen cases of Lænnec's cirrhosis were found; whilst postnecrotic cirrhosis was present at the average age of 45 years, Lænnec's cirrhosis was found in women who were a decade or so older. The most frequent single etiological factor in the Lænnec group was heavy intake of alcohol (in six cases) and in three cases inanition was present. This type of cirrhosis was much more likely to be subclinical for several years, whereas postnecrotic cirrhosis generally had a more rapid clinical course.

—

TRIMEPRAZINE FOR PREMEDICATION OF CHILDREN

At the Hospital for Sick Children, London, England, a series of 200 children about to undergo operation were given premedication alternately with quinalbarbitone or a new preparation, trimeprazine tartrate (Vallergan) in syrup form. Cope and Glover (*Lancet*, 1: 859, 1959) were favourably impressed with the new preparation. It was palatable and easy to administer, and its hypnotic effect was equal to that of quinalbarbitone. It did not prolong the period of recovery to a safe state, and fewer children vomited or were restless after operation. The only disadvantage of the new preparation was the amount which had to be taken.

—

PULMONARY ARTERIO-VENOUS FISTULAS

Cyanosis, clubbed fingers and polycythæmia may be occasionally due to multiple small pulmonary arteriovenous fistulas. These are not always congenital anomalies but may be due to various other diseases. Pierce, Reagen, and Kimball (*New England J. Med.*, 260: 901, 1959) report the case of one 24-year-old man with progressive dyspnœa and mild cyanosis which developed at the age of 14. His symptoms at that time improved with administration of Lugol's solution. At the age of 17 it was found that he had adenocarcinoma of the thyroid gland with metastasis in the cervical lymph nodes and diffuse miliary infiltration of the lung fields. The patient was treated with x-rays to the neck, and seven years later was given 105 millicuries of radioactive iodine which relieved him again. For the next six years he continued essentially unchanged, and his cyanosis and mild exertional dyspnœa did not prevent his marriage or his employment as a machinist. During those years he had had several episodes of hæmoptysis and they became increasingly more frequent. At this time it was possible to confirm the presence of metastases from the thyroid carcinoma in the pulmonary lesions by scanning the chest after I^{131} uptake, and to find evidence in his laboratory tests of pulmonary arteriovenous shunts. Repeated oral intake of radioactive iodine has resulted in an improvement in his dyspnœa and cyanosis as well as in an increase in the arterial hæmoglobin saturation.

(Continued on page 68)

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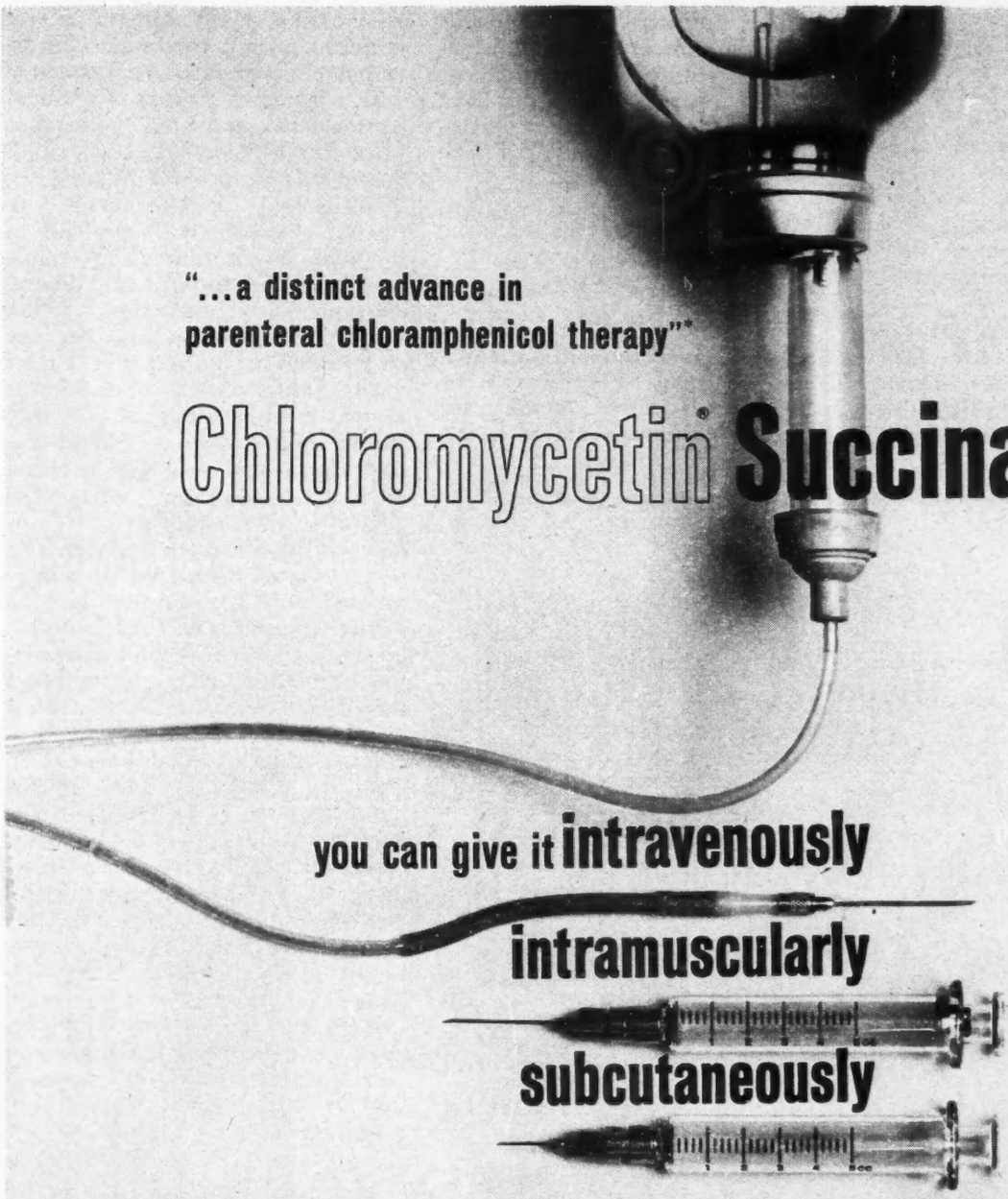
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CHLOROMYCETIN is a potent therapeutic agent and, because certain blood dyscrasias have been associated with its administration, it should not be used indiscriminately, or for minor infections. Furthermore, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

*Ross, S.; Puig, J. R., & Zaremba, E. A., in Welch, H., & Marti-Ibañez, F.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 817.

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MEDICAL NEWS *in brief*

(Continued from page 66)

The second case was of a 15-year-old boy with similar symptoms and signs since the age of 8. His arterial hæmoglobin oxygen saturation was 67% after breathing air. He died of an intractable urinary infection and at autopsy congenital hereditary hæmorrhagic telangiectasia was found with multiple small pulmonary arteriovenous fistulas, cirrhosis of the liver with œsophageal varices, hypospadias and pyelonephritis. The authors discuss both congenital and acquired pulmonary arteriovenous fistulas, and mention previous reports of acquired A-V fistulas in patients with cirrhosis of the liver and with pulmonary schistosomiasis.

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MEASURING THE VOLUME OF PLEURAL EFFUSION

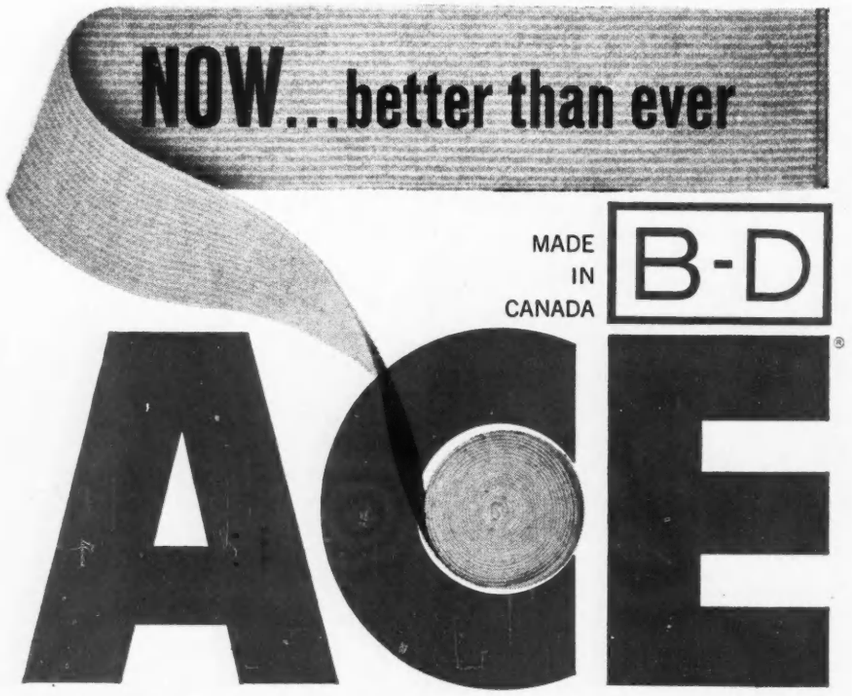
The volume of a pleural effusion can usually be estimated with sufficient accuracy by percussion or radiology. However, there are times when a more accurate evaluation is of importance, as for example during treatment of carcinomatous metastases associated with a pleural effusion. Vroom of Amsterdam and his colleagues (*Nederl. tijdschr. geneesk.*, 103: 883, 1959) describe a method for quantitative measurement of pleural effusions with the aid of the dye, Evans blue. They made comparative studies of pleural effusions by percussion, radiographic examination, and the use of Evans blue by injection. Under local anæsthesia, the effusion was tapped through a lumbar puncture needle, about 100 c.c. of fluid was withdrawn and a sterile solution of Evans blue, 20 c.c. in a concentration of 0.3 mg. per c.c., was injected into the pleural cavity. The patient was instructed to move around and 15 minutes later a second puncture was made and a quantity of pleural fluid removed for estimation of the dye. From this estimation, the total amount of pleural fluid present was calculated. The method seemed to give results with an error of not more than 5 to 10%. In six patients with metastases from mammary carcinoma during hormone treatment, the course of the pleural exudate was followed up by this method. A definite relation was found to exist between the estimated volume of pleural effusion and its level as established by percussion; one litre of pleural effusion corresponded with dullness extending over a height of 6 to 10 centimetres.

—

ASCITES AND ITS MANAGEMENT

In a discussion of ascites and its management at the Royal Society of Medicine (London), Sheila Sherlock reported on the measurements of colloid osmotic pressure of serum and ascitic fluid, of portal capillary pressure and of intra-abdominal pressure in patients with cirrhosis of the liver, and in patients with normal liver structure but with an extrahepatic obstruction to the portal vein. She has found that patients with a high effective portal pressure were at times free of ascites, whilst on the other hand ascites was present in patients with a hardly raised portal pressure. Serum colloid osmotic pressure seems to be a better index for the appearance of

(Continued on page 70)



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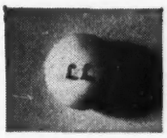
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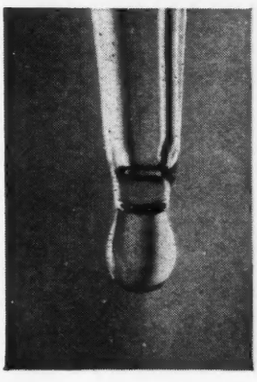


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MEDICAL NEWS *in brief*

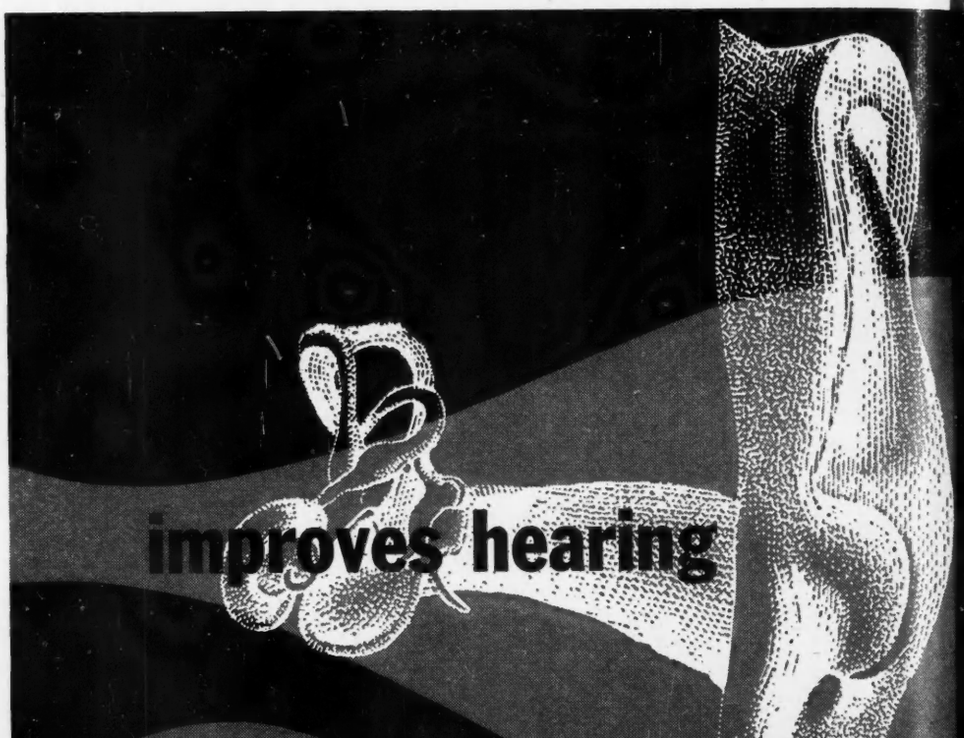
(Continued from page 68)

ascites, and 270 mm. H_2O is apparently the dividing line below which ascites may occur. Elevating the serum colloid osmotic pressure as with intravenous salt-poor albumin can at times produce dramatic diuresis. The treatment with salt-poor human albumin is, however, very expensive and occasionally is followed by hæmorrhage from œsophageal varices.

End-to-side portacaval anastomosis is at times successful but is usually followed by gross peripheral œdema. She referred to the recent suggestion by McDermott of the use of a double end-to-side portacaval shunt, both ends of the portal vein being implanted separately into the inferior vena cava. Increased amounts of aldosterone have been found in the urine of the patients with cirrhosis and ascites. Amphenone, which antagonizes several adrenal hormones, has been tried in such cases, but it is too scarce and too toxic. Recently other anti-aldosterone agents have been tried, and the most active of them, "SC 8109", was found to produce diuresis of sodium and water in some patients with cirrhosis and ascites. The most active diuretic is chlorothiazide, but hepatic coma may be precipitated by the hypokalæmia following its use.

P. Knipe reported on the results of treatment with portacaval anastomosis, lienorenal anastomosis and hepatic artery ligation. Of 350 cases of portal hypertension in Alan Hunt's series 262 had moderate or severe cirrhosis and of them 117 had shunt operations. Forty-seven of these patients had ascites at the actual time of operation. Of 14 patients submitted to hepatic artery ligation, five survived and in two of these the ascites was unaffected. Those who died and those whose ascites was unaffected all had a serum albumin under 3.2 g./100 ml., which today would have been a cause for rejection for such an operation. Of the three who had levels over 3.2 g./100 ml. two are alive and well but one died later of hæmorrhage. Of 24 patients who had portacaval anastomosis 19 survived; in 15 operation was considered successful, three dying from other causes but free of ascites and the other 12 being still free from ascites and at work 1-5 years postoperatively. Eight patients had a lienorenal shunt and all seven who survived remained free of ascites.

J. A. Girling described the operation of ileo-enterotropy performed on one 32-year-old woman who had ascites after two attacks of jaundice 9 and 11 years previously. Since operation, her ascitic fluid has accumulated much more slowly but her downhill course has continued unchanged and she has increasing peripheral œdema. Ascites due to malignant disease was discussed by B. W. Windeyer, N. R. MacKay and M. Reilley. Of 235 cases of peritoneal or pleural effusions due to known malignant disease and treated by radioactive colloidal gold, 28 of the ascites cases had inhibition of fluid formation following the treatment. M. Reilley had tried talc powder tipped in and stirred around at laparotomy or instilled in suspen-



In patients with disturbances of the inner ear, Arlidin produced remission of their chief complaint (impaired hearing, tinnitus or vertigo) in over 50% of cases. "Significant hearing improvement" occurred in 32 of 75 patients." Rubin and Anderson[1] attribute these symptoms of circulatory disorders of the inner ear to "labyrinthine artery insufficiency" due to spasm or obstruction of the vessels. They presumed that improvement could be produced by an agent capable of increasing blood flow and consider that the efficacy of Arlidin in this condition is due to its superior vasodilating and vasorelaxant effects.

1. Rubin, W., and Anderson, J. R.: Angiology, Oct. 1958.

sion through a cannula into the peritoneal space. He has treated seven or eight cases in this way, with some reduction of ascites which in one case was most dramatic—*Proc. Roy. Soc. Med.*, 52: 247, 1958.

—

CYCLOSERINE AS AN ANTIDEPRESSANT

Crane (*Am. J. Psychiat.*, 115: 1025, 1959) reports antidepressant effects from the antituberculous drug, cycloserine (Seromycin). He studied the mental effects of the drug in 16 men and 15 women under treatment for tuberculosis, on a daily dosage of 500 to 2000 mg. Out of this group 27 patients reported a substantial improvement of a psychological nature with lessening of anorexia, of asthenia and of insomnia. Crane thinks that cycloserine is a psychopharmacological agent, because it reverses depressions and seems to potentiate iproniazid. He suggests that it may become a valuable tool in research and might have therapeutic use in depression.

—

TREATMENT OF DUPUYTREN'S CONTRACTURE

Nina Debeyre (*Semaine thérapeutique*, No. 7, July 1958) treated 135 cases of Dupuytren's contracture of the palmar fascia with local injections of hydrocortisone. The number of patients so treated and the time elapsed since then (four years) gives considerable significance to the results.

All of the cases were in the four stages of the disease described by Ischer and Dickmann. The treatment utilizes an intravenous (relatively large diameter) needle to inject hydrocortisone into each of the indurated nodules in the palm. The quantity injected depends on the particular location and varies from 0.5 to 1.0 c.c. Not infrequently, 5 to 10 injections are made on the same patient during the same visit when the affection is of large extent, by utilizing 5 and more c.c. (125-plus mg.) of hydrocortisone.

In the 2nd, 3rd and 4th stages, local injection and local massage are accompanied by the wearing of plaster casts at night. Eighty cases in the first stage of the disease showed partial remission, and further development was arrested in all cases. This is noteworthy since it seems to indicate that early treatment (in the first stage) may be capable of preventing the disease from developing into the 2nd, 3rd and 4th stages and the resultant crippling effect.

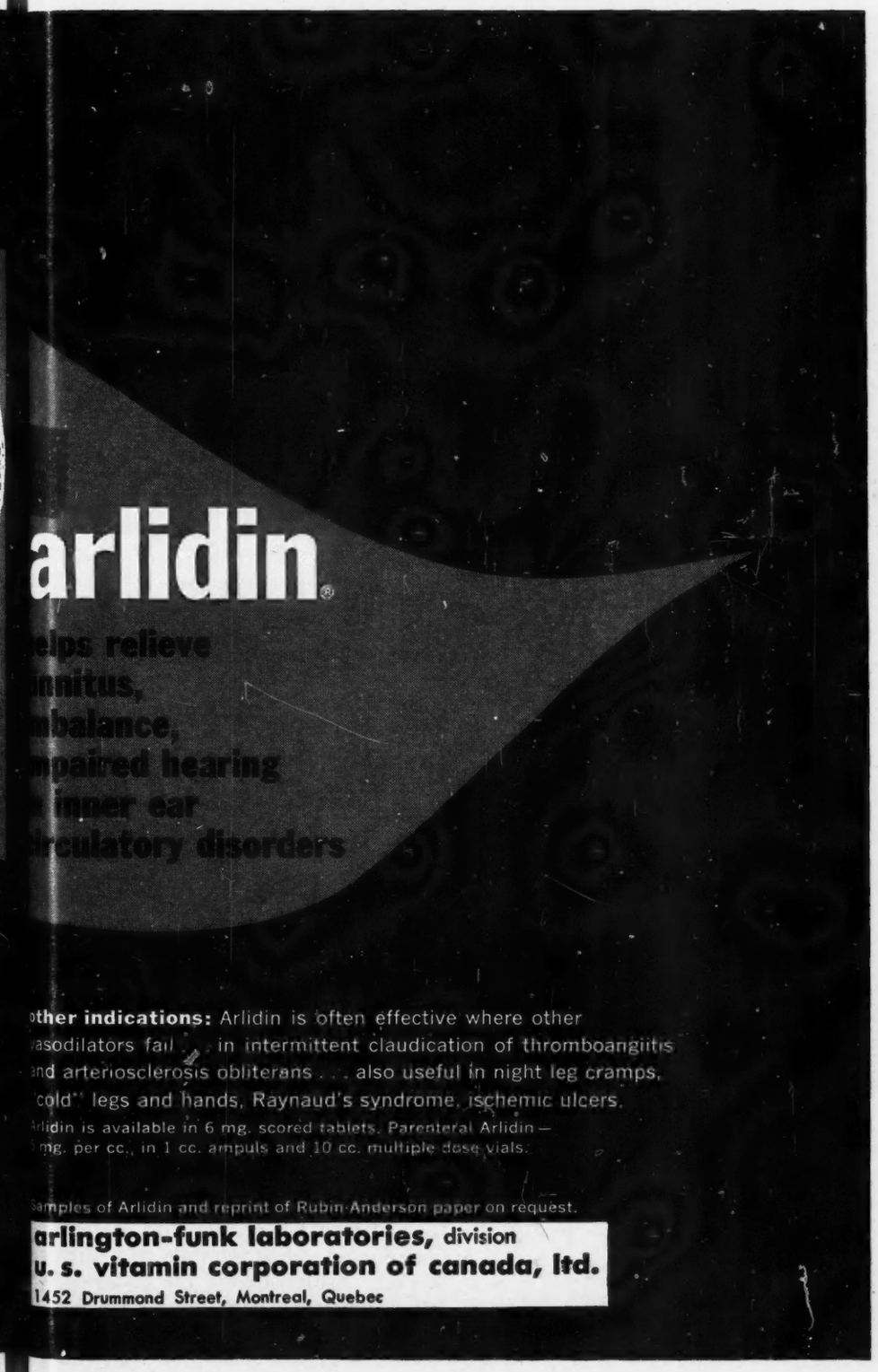
Complications such as fractures of phalanges, ruptures of tendons or infections of the hand were not observed. The author believes that treatment of the disease by local injection of hydrocortisone gives dependable results.—*Quarterly Review of French Medical Publications*, No. 6, April 1959.

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PAN AMERICAN HEALTH ORGANIZATION

The Executive Committee of the Pan American Health Organization, meeting on May 8, recommended that PAHO's Directing

(Continued on page 72)





MEDICAL NEWS *in brief*

(Continued from page 71)

Council establish the Organization's regular program and budget level at $4,100,000 for 1960. The amount was proposed by Dr. Abraham Horwitz, Director of PAHO's operating arm, the Pan American Sanitary Bureau. Dr. Horwitz said requests received from member governments by PAHO for international co-operation in the coming year exceed by $1,500,000 the Organization's anticipated resources.

The seven-nation Executive Committee, representing the 24 PAHO member states, expressed its appreciation to the U.S. Government for the announcement that Congress is considering the purchase of a site for a new headquarters for the Organization in Washington.

The group also requested the Director to consult with the Government of Argentina on the advisability of planning an inter-American congress on public health before the XVI Pan American Sanitary Conference to be held in Buenos Aires in 1960.

The Committee extended congratulations to the Republic of Colombia for its ratification of the Constitution of the World Health Organization. Colombia had been the only American state that had not ratified the WHO Constitution and consequently did not hold membership in WHO.

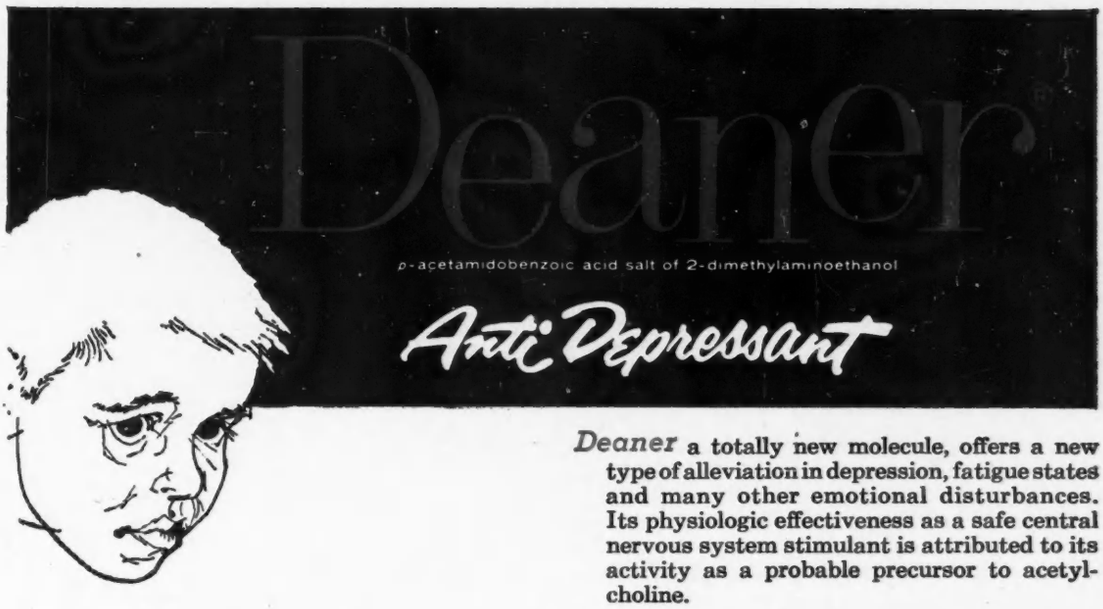
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TREATMENT OF NARCOLEPSY WITH METHYL PHENIDATE (Ritalin)

In a preliminary report in 1956, Yoss and Daly described the results of therapy with methyl phenidate (Ritalin) in 25 patients with narcolepsy treated from one to six months; 84% of the patients reported good to excellent relief of their abnormal sleepiness. By November 1957, the number of patients on the drug had risen to 68, and a second report (*Neurology*, 9: 171, 1959) deals with 60 on whom adequate information is available. There were 43 males and 17 females and their ages ranged from 12 to 67 years. The initial dose for the adult patients was one 20 mg. tablet taken 30 minutes before each meal. Good to excel-

(Continued on page 74)

For Emotionally Disturbed Children



Do Not confuse it with tranquilizers

'Deaner' must not be confused with tranquilizing or sedative drugs which may aggravate depression. On the contrary, 'Deaner' is often used to counteract drug-induced depression.

'Deaner' is valuable as an emotional normalizer in many situations other than depression, such as behavior problems with agitation. Nor should 'Deaner' be considered an ordinary stimulant. Its gentle action differs from that of other stimulants in that it leads to increased useful energy and alertness without the undesirable side effects of the amphetamine-like drugs.

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Deaner is valuable in the treatment of children, especially those whose performance is impaired by behavior problems, whose attention span is too short, and who are emotionally unstable, unpredictable, and unadaptable.

Dosage ***for children:*** Initially ½ to 1 tablet in the morning. Maintenance dose ½ to 3 tablets. Full benefits may require two weeks or more of therapy. Supplied in scored tablets containing 25 mg. of 2-dimethylaminoethanol as the p-acetamidobenzoic acid salt. Available in bottles of 100.

Literature and bibliography available upon request.

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MEDICAL NEWS *in brief*

(Continued from page 72)

lent relief of abnormal sleepiness was reported by 49 patients, and concurrent improvement of cataplectic attacks occurred in 15 of 27 patients who also had this symptom. Patients who obtained a satisfactory response usually maintained this effect for the 27 months of the study. However, in the 25 patients previously reported on, 84% success was reduced to 68% after prolonged use. The authors believe that methyl phenidate is the drug of choice in the treatment of narcolepsy.

—

TEN-YEAR SURVIVAL AFTER CEREBRAL THROMBOSIS

A review by Robinson *et al.* (*J. A. M. A.*, 169: 1149, 1959) of all cases with a diagnosis of cerebrovascular disease admitted to the three hospitals in Worcester, Mass., during the years 1947 to 1956 yielded 1018 records of patients with definite cerebral thrombosis. Facts regarding mortality, survival, recurrence, and severity of initial attack were organized in life-table form and compared with data on the New England population. The initial mortality of the whole series was 21%. Fifty per cent of the patients were dead within 4.1 years, while at the same time only an estimated 18% of the general population of this age distribution would have died. No sex difference was apparent in long-term survival, and the principal cause of death was recurrent cerebrovascular disease and other vascular disorders. Congestive heart failure, severe initial attack of thrombosis and early recurrence of the disease were the three factors that adversely affected prognosis.

—

ETHOXZOLAMIDE – A NEW ANTICONVULSANT

Ethoxzolamide or 6-ethoxybenzothiazole-2-sulfonamide is a carbonic anhydrase inhibitor related to acetazolamide (Diamox). The *in vitro* carbonic anhydrase activity of ethoxzolamide was found to be twice that of acetazolamide. It is more effective than acetazolamide but less effective than diphenylhydantoin (Dilantin) in protecting rats against electroshock activation.

Twenty-five patients of an epilepsy clinic, of whom five had petit mal, nine grand mal, and 11 psychomotor seizures, were studied by Solomon and Hirano (*Neurology*, 9: 167, 1959) for the effect of ethoxzolamide. These poorly controlled patients remained on their basic regimen, usually diphenylhydantoin and phenobarbital, in order to avoid status epilepticus and to prevent too many other changes. The period of observation under this new treatment was 6-17 months, most patients being observed for the longer period of time. Most patients with grand mal and petit mal seizures were brought under excellent control, and the improvement in patients with psychomotor seizures, though less striking, was also significant. Some side effects were present in 13 of the 25 patients; six patients complained of dizziness, three had marked drowsiness and two patients reported head-

(Continued on page 76)



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Physicians who have used PROTAMIDE extensively deplore such statements as unfortunate when they appear in the lay press. They have repeatedly observed in their practice quick relief of pain, even in severe cases, shortened duration of lesions, and greatly lowered incidence of postherpetic neuralgia when PROTAMIDE was started promptly. A folio of reprints is available. These papers report on zoster in the elderly—the severely painful cases—patients with extensive lesions. PROTAMIDE users know "shingles" *can* be helped.



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1. Ferguson, J. K. W.: *Canad. M. A. J.* 74:793, 1956. 2. Armstrong, J. D., and Kerr, H. T.: *Ibid.* p. 795. 3. Bell, R. G.: *Ibid.* p. 797. 4. Armstrong, J. D.: *Ibid.* 77:228, 1957.

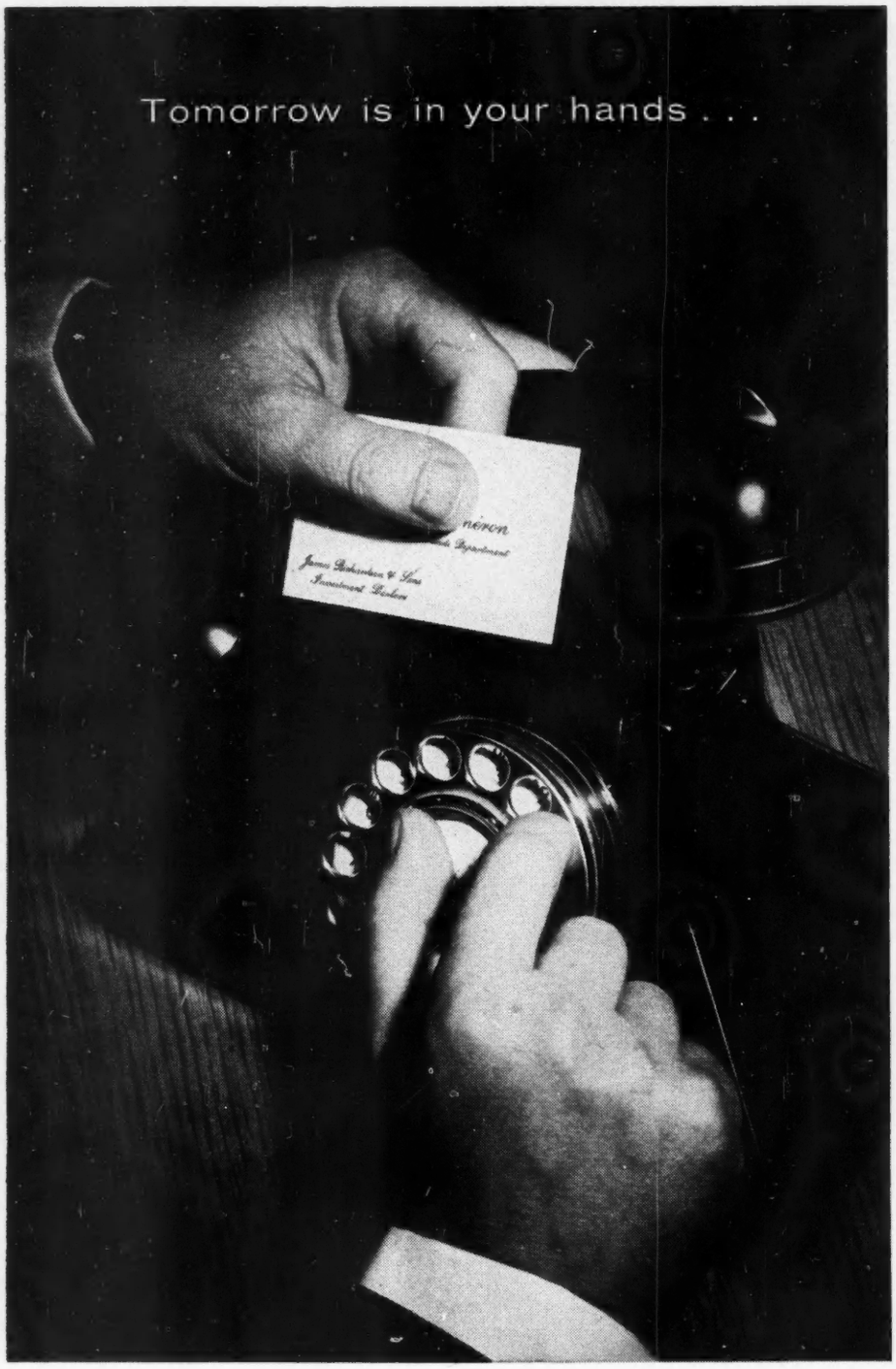
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MEDICAL NEWS *in brief*

(Continued from page 74)

aches. Only two patients required discontinuation of the medication because of side effects. Studies are now in progress to measure the effectiveness of ethoxzolamide as an anticonvulsant while gradually withdrawing the basic medication. The present results indicate that this drug is a significant addition to the growing number of anticonvulsant agents.

—

AMERICAN UROLOGICAL ASSOCIATION AWARDS

The American Urological Association offers an annual award of $1000 (first prize of $500, second prize of $300 and third prize $200) for essays on the result of some clinical or laboratory research in urology. Competition is limited to urologists who have been graduated not more than ten years, and to hospital interns and residents doing research work in urology.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Palmer House, Chicago, Illinois, May 16-19, 1960.

For full particulars write the Executive Secretary, William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. Essays must be in his hands before December 1, 1959.

—

TEACHING FINANCE TO THE MEDICAL STUDENT

A new hazard looms on the horizon of the British medical student. A Select Committee of Members of Parliament has urged the Minister of Health to do more to ensure that medical students are taught the principles of finance governing the National Health Service, and also are made aware of the relative costs of the different drugs they will prescribe. This mania for including information about everything in human life in the already overburdened medical curriculum is sharply criticized in *Guy's Hospital Gazette* (73: 163, 1959). The editor says:

"Charts in the hospital, and frequent comments on teaching rounds, have given us at least a rough idea of these subjects without being 'lectured at'. A single

(Continued on page 78)

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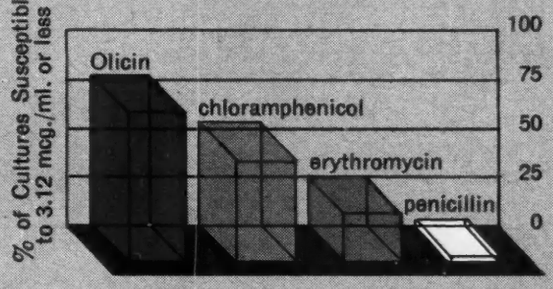
effective . . .

CLINICAL RESULTS	adults	children	all Staph infections
Cured	172 (80%)	148 (89%)	71 (88%)
Improved	28 (13%)	8 (5%)	7 (9%)
Failure	17 (7%)	11 (6%)	3 (3%)

Types of infecting organisms: The majority of identified etiologic microorganisms were Staph. aureus and Staph. albus. Olicin has its greatest usefulness against organisms such as: staphylococci (including strains resistant to other antibiotics), streptococci (beta-hemolytic strains, alpha-hemolytic strains and enterococci), pneumococci, gonococci, Hemophilus influenzae.

even against resistant staph[1,2] . . .

Per cent of "antibiotic-resistant" epidemic staphylococci cultures susceptible to Olicin erythromycin, penicillin and chloramphenicol.[1]



well tolerated . . .

REACTIONS:

(a) adults	(b) children
Total—9.2% (20 out of 217)	Total—0.6% (1 out of 167)
Skin rash—1.4% (3 out of 217)	Skin rash—none
Gastrointestinal—7.8% (17 out of 217)	Gastrointestinal—0.6% (1 out of 167)

There was complete freedom from adverse reactions in 94.5% of all patients. Side effects in the other 5.5% were usually mild and seldom required discontinuance of therapy.

plus . . . stability in gastric acid • rapid, high and sustained blood levels • high urinary concentrations • outstanding palatability in a liquid preparation.

Dosage and Administration: Dosage varies according to the severity of the infection. For adults, the average dose is 250 mg. q.i.d.; to 500 mg. q.i.d. in more severe infections. For children 8 months to 8 years of age, a daily dose of approximately 15 mg./lb. body weight in divided doses has been found effective. Since Olicin is therapeutically stable in gastric acid, it may be administered at any time, without regard to meals.

Supplied: Capsules 250 mg., bottles of 12 and 100. Oral Suspension—60 cc., bottles of 125 mg./5 cc. (1.5 Gm. dry powder). Pediatric Drops—10 cc., bottles of 100 mg./cc. (1.0 Gm. dry powder).

References: 1. English, A. R., and Fink, F. C.: Antibiotics & Chemother. (Aug.) 1958. 2. English, A. R., and McBride, T. J.: Antibiotics & Chemother. (Aug.) 1958. 3. Wennersten, J. R.: Antibiotic Med. & Clin. Therapy (Aug.) 1958. 4. Celmer, W. D., et al.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia, Inc., 1958, p. 476.

MEDICAL NEWS *in brief*

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lecture could equally well summarize the important points. But it would be foolish to have a further compulsory series of lectures, and naïve to expect students to learn more of the matter than they do at present. Members should know that if strings of figures are demanded of students (who will have no future need of them beyond the rough relationships which 'come naturally' when on the wards), then they will be grudgingly acquired or hopefully skimmed over, and forgotten in a week. The few who retain costs in their heads for longer will be defeated by changes in prices and by the arrival of new drugs. But in this suggestion, apart from its impracticality, we recognize with dismay another well-meaning but misguided attempt to put things out of proportion. Those who have recently taken qualifying examinations, and their seniors who are now in practice, will testify that the important part of medical training is the clinical work—missing a lecture in order to see patients pays dividends again and again. It is useless to know that cortisone costs more than aspirin if one cannot distinguish the rheumatoid from the gouty patient. The finances of the Health Service are a headache, but let the Minister tell his committee that more lectures mean worse doctors, and will solve no problems."

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ALCOHOLISM RESEARCH FOUNDATION OF ONTARIO

The 8th Annual Report of the Alcoholism Research Foundation, for the year ending December 31, 1958, is a very attractive document and gives a full account of the activities of the Foundation, which now includes a new branch in Hamilton. In 1958, the municipal council of Hamilton granted $25,000 towards the budget involved in establishment of a community alcoholism treatment clinic for the city, thus becoming the first Ontario municipality to co-operate actively with a provincial foundation in providing treatment for alcoholics. However, in his chairman's report, Mr. I. P. McNabb expresses the belief that in the long run most treatment for alcoholics should be provided through existing health facilities rather than through specialized clinics established exclusively for alcoholics. He also notes the need for involvement of a wide variety of types of treatment facilities in this task.

The Executive Director, Mr. H. David Archibald, comments on the release of citrated calcium carbimide (Temposil) for treatment of alcoholism; this drug was pioneered by workers with the Foundation.

In his research report, Mr. John R. Seeley says that there is no good reason to hope for any sudden breakthrough of knowledge that would enable us to bring alcohol problems under immediate control, and also no good reason to fear that little headway can be made against them.